

BOARDWATCH MAGAZINE

Guide to Internet Access and the World Wide Web

Abilene Lights the Track for a New Internet

Dvorak — PalmPilot Code More Robust Than Windows

No New ISP Taxes — For Now

Putting Java 2D to Work

VRML — Not Ready for Prime Time

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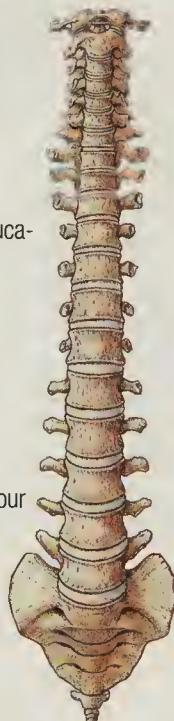
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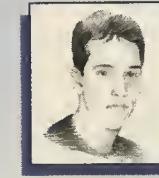
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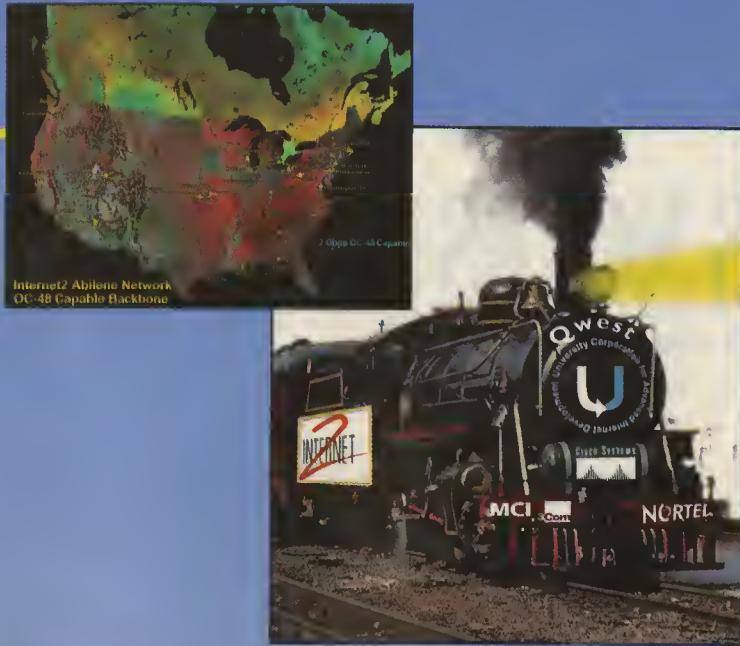
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EDITOR'S NOTES

by Jack Rickard

FEAR AND GREED ON THE INTERNET

To continue to crow about our projections of more and larger ISPs hailing back some three years now, in the face of unanimous agreement among analysts of less and larger ISPs for the entire period, one of the somewhat ethereal indicators we watch is the potential demand for Internet access. There are several possible scenarios. The most simplistic is that growth in the demand for Internet access continues until all persons with personal computers have a connection, at which point the music stops.

To my view, this is too simplistic a view. Demand is somewhat more fluid. First, it isn't limited to people, and in fact most of the money going into Internet access is corporate in nature. Second, there are a variety of types of access, for a variety of purposes, not all of them mutually exclusive. And finally, the reasons for access and what that means changes. Getting a connection for electronic mail requires a certain skill set, certain equipment, and certain access to accomplish. If you want to add voice telephone capabilities to the use, everything changes rather totally. Video/voice phone, the bandwidth requirements go up again. International fax - things change a bit again.

Two aspects of business demand are most encouraging. First, companies who have spent money on progressive communications development have won. Today, companies spend half as much on communications as they did five years ago, and are communicating twice as well. But it is like cocaine. If five years ago, I as an executive level worker could interact with 15 people per day - primarily by voice phone and mail, today I can deal with 60 or 70 people using voice, mail, fax, and e-mail. So I should be going home by 11 a.m. and working three days a week, right? So how come I'm here at 9 at night and still coming in on Saturdays?

Business is a bit like battle, and since the time of Julius Ceasar, who demonstrated the utility of the 100 mile-per-day legionnaire courier, communications has a demonstrable role in winning. As corporate communications has become more dependent on personal computers, Moore's law has gradually extended into the communications space, leading to a doubling in capability and a halving of costs with the usual counter-intuitive result - it STILL isn't enough. There is no way to oversupply corporate America with better-faster-cheaper communications.

So anyone with an idea as to how to deliver Internet access, and increasingly all forms of communications, cheaper, small-

er, more specialized, faster, better, can, with minimal resources, develop a business with huge potential rewards. And if it works, they can at this point almost be assured that someone with more resources will desire that developed/developing market segment and pay huge multiples to get it.

But there is an even more heady demand dynamic at work at the same time. Most of the businesses in the country have so far been left out of the party. There are some 15 million sole proprietorships registered with the government and at least 8 million viable small- and medium-size businesses. We recently received a hilarious press release noting that "thousands of *Fortune* 500 companies agree - our product x is the one to have yata, yata." This captures, for me, the Yin and Yang of the business market. Everyone wants the lucrative *Fortune* 500 market, and at the same time, they want a much wider market universe of thousands of companies. After extensive surveys and analysis, I have concluded that the potential for the total number of *Fortune* 500 companies to ever exceed, say, about 500, is actually quite low. But there are literally millions of other businesses.

In truth, *Fortune* 500 companies do buy a lot of stuff. But they tend to have their own staffs of highly trained technical people. As I've previously noted, almost all the paid readership of *Boardwatch Magazine* isn't what we conventionally think of as an ISP at all. But within these large companies, we have over twenty thousand other readers that essentially ARE ISPs - within the corporation. As a result, they are quite knowledgeable, do purchase lots of equipment, but are quite capable of deploying most of it in house using in house personnel.

For smaller businesses, it works a little differently. You can do your own research on this quite easily. Anywhere outside of Sillycon Valley proper, take an elevator ride. First, everyone is now talking about the Internet. I had a guy stop by my little ranch and offer to chip up a pile of brush for me he saw from the road. In minutes we were talking about the Internet and how he'd finally settled on GTE after dabbling in AOL and Netcom. His final decision for what he thought of as Internet access was based on GTE's ability to let him use his own name as an e-mail address. It was already taken on Netcom. Every small business is talking about Internet access. And most either don't have it at all, or have a basic e-mail account.

Most small businesses have recognized and adopted the use of the personal computer. Often these computers are not even networked, much less connected to the Internet. At most one person is the PC guru, and often on a part-time or voluntary basis. Connecting to the Internet looks to these people mysterious, difficult, and expensive. Some have developed the

sophisticated strategy of having an AOL account so they can at least send and receive electronic mail. Worse, some of them have four, six, or even eight AOL accounts and are actually spending a bit for telephone lines and AOL accounts just to accomplish basic electronic mail.

Universally, they all know they need something more. But a full connection to the Internet, even at dial-up speeds, starts to bring up a lot of questions. How to do e-mail for the company? What is a router and which one should I get and how do I configure it? How do I get a domain name recognizably like my company's? How do those guys do their own web site? Do I really need to pay a 22-year-old kid \$70,000 per year to do all this and hold my company hostage if he decides he'd really rather play in a new age heavy metal band?

The result is indecision and delay. I need more Internet, but it doesn't look good right now. It will probably be easier later. And so we have this vast overhang of latent demand for Internet access "when it gets easier."

Into this scenario, circa late 1997/early 1998, we start to see popular press news stories of entrepreneurs with fantastic success with web sites and Internet access. There are thousands of "book stores" across the country. And the message leaking out into the public psyche is that Amazon.com is a book store, has put up a web site, is now selling MILLIONS of books nationwide and even world wide, and has kicked Barnes & Noble in the pants all around the block by putting up a web site first. E*TRADE and some 50 other online brokerages nobody has ever heard of are causing a revolution in stock trading such that within a few years, if you don't have an online trading component, there's no point in trying to continue as a stock broker. CDNow is doing the same thing with compact disc music sales. It's happening in video. It's happening in flowers. Now they are putting a dent in car sales at Auto-By-Tel.

Whether all of this is true, imminent, or matters, is entirely irrelevant. This is the dynamic across the body politic. There are two possible immediate reactions in small business and you can have one or both but ultimately only both: Fear and/or Greed. Greed to also gain a competitive if not dominant edge and transform the mom and pop dry cleaners into an international dry cleaning power house cleaning clothes worldwide over the worldwide web, and fear that all of our competitors will do it and we'll actually be put OUT of business in two years after working most of our adult life to build this three store dry cleaning empire that we have.

It has been my observation, learned the hard way over 43 years, that these are two very powerful motivating emotions that drive almost every form of accomplishment or action. In combination, they are actually explosive. And I am not certain we aren't poised for the uncontrolled acute form - panic. In this case, let's coin the term WEB-PANIC.

The result starts to look like a national panic to get onto the Internet from several MILLIONS of small businesses who suddenly find they have more resources to devote to this mission than they did before the panic/anxiety attack commenced.

The problem is it is still terribly icky to actually hook up a small office of six computers to the Internet. There is a shortage of labor available that COULD help. And these companies

are about a thousand times more likely to want to outsource all of it than the Fortune 500.

This augurs extremely well for ISPs who can execute a good sales and marketing program coupled with superb customer service focused on small- and medium-size businesses. Some ISPs saw this two years ago, and tried to do it, and largely failed. I would posit that this was because it was two years ago. Note that it is not two years ago now, and in fact, we technically refer to this current period as "two years later."



The opportunities are enormous. But so are the needs. Small businesses need a couple of obvious things to make this trip. First, there is contact with someone who would care and can help. This points to Internet access companies with a good targeted sales and marketing program effectively directed at small businesses. Second, they need some reasonably priced tools and equipment that will accomplish the connection with a minimum setup and with a maximum ability to deliver all necessary Internet services, and will allow for growth in use without having to wipe it out and start over with something else. And finally, they need an ISP they can call with questions, requests for further services, or just to complain about life, the universe and the meaning of TCP/IP. Let's pick some winners.

TOOL TO HOOK UP SMALL BUSINESSES. My old friend and past partner Phil Becker, always one of the ablest technologists and programmers I've ever known, has also always had a bit of a timing problem. Phil is the kind of guy who actually would show up fully dressed and looking in his prime for his own funeral six or seven years before it was all really necessary or even desirable. Since I've never actually seen him partake of alcohol, it's even hard to drink to his health at the also premature wake. But he may have finally got it down. He pulled an Initial Public Offering (IPO) on the Vancouver Exchange in March at about a dollar. Some 45 days later it's trading at \$9 per share. The excitement is over his IPAD 1200, which of course he had mostly working three years ago and has been honing since specifically for this small business market, which of course didn't actually exist then. We've looked at the Whistle InterJet, the Team Apexx, the WinGate's and on and on. This actually isn't a contest. The IPAD is extremely easy to install, enormously powerful, and can scale right up to the point where the small business decides they'd rather be an ISP themselves than do the dry cleaning thing. The other "all-in-one" packages hit the wall about twelve minutes after installation, and the wheels are falling off in all directions thereafter. But the IPAD can take on new work almost *ad infinitum*. A number of smallish ISPs actually use this Internet Protocol Adapter to provide dial-up access, e-mail, DNS, etc., with some success over several years. In the "All Internet In One Box" category, this new IPAD simply rolls over the top of anything else we've seen. EZ.U on the



Vancouver Exchange and expected to go NASDAQ this summer as ESFT. <http://www.esoft.com>

ISP TO HOOK UP SMALL BUSINESS. Verio has been a problem child for me for over a year. Huge money from Norwest Partners, Brooks Fiber, and now Nippon Telephone with a mission of somehow, somewhere, being an ISP or backbone, or ISP franchiser, or something similar in some way. They embarked on a buying spree picking up pieces of small and medium ISPs in markets all over the country with a vague mission of serving smaller businesses. That has apparently finally coalesced into a more cogent plan of buying 100 percent of a number of competent players and they now have quite a stable.

They tend to buy ISPs with stock as a big part of the deal, essentially acquiring the technical expertise of the principals in the process. Don't overlook this concept. In a tight labor market paying huge premiums for technical competency, a lot of businesses with great plans and great money resources are failing to get off the ground because the people they were going to go "hire at the proper time" were simply not available at any price when it came time to execute. Verio has this worked out with their acquisition strategy.

Better, they now have a system all the way up to a national backbone using \$100 million in fiber and services from Qwest Communications, and an unequivocal mission to focus on small- and medium-sized businesses. Reading their prospectus, I don't see a lot of anything else defocusing this. They're committed to connecting small- and medium-sized businesses. They have the plan, the management team, the resources, and the facilities. And they have a sneak attack game going on acquiring tech savvy personnel. They'll have to work late into the night to drill this one into the ground.

Tragically, their President and COO Mark Johnson died March 9, 1998. But the surviving management team looks superb. They're doing an IPO in mid-May at \$18 to \$20 and will be on NASDAQ as VRIO by the time this hits the street. <http://www.verio.com>

SMALL BUSINESS MARKETING WINNERS

This one isn't going to win me any roses. But the companies best able to fill this bill are the existing Regional Bell Operating Companies. Preternaturally focused on volume, inexplicably at the same time they chant "value added, value added" they seem to be bound for scrapping in the parking lot over mass consumer dialup. But their strength currently lies in existing relationships with small businesses for voice telephone. Most small businesses would get a warm fuzzy feeling that all of this had reached prime time if it came from the local telco. Unfortunately, some of the RBOCs have also left a trail of unhappy campers in this area. And their ability to do the kind of intense customer service/handholding necessary is a little weak and unproven. But the local television ad campaigns, and existing relationships make them the first that the truly lost small business would hear from.

In all of this, I would like to wedge in a final word on voice over IP telephone service. The enthusiasm over this is quite strong,

and it is true I've been a proponent of this application for years. But there are a couple of realities. First, most of what we're seeing now involves fairly grandiose net-wide applications with vendors such as Nortel and Lucent and others actually building this into telco switches. It remains unclear to me when, if ever, voice quality will match circuit switched. I can say this, I have an AT&T pocket PCS wireless phone that delivers such poor sound that I have decided it's about as useful as a hockey puck and I might as well carry a banana around in my pocket as this piece of crap. I do truly have a low threshold of pain for things that don't work. But so do a lot of other people. Geosynchronous satellite long distance died years ago because people just weren't willing to put up with the 250 msec roundtrip delay inherent in bouncing off satellites 23,000 miles up. Voice over IP could suffer the same fate. Lots of enthusiasm, 30 days of use, followed by death.

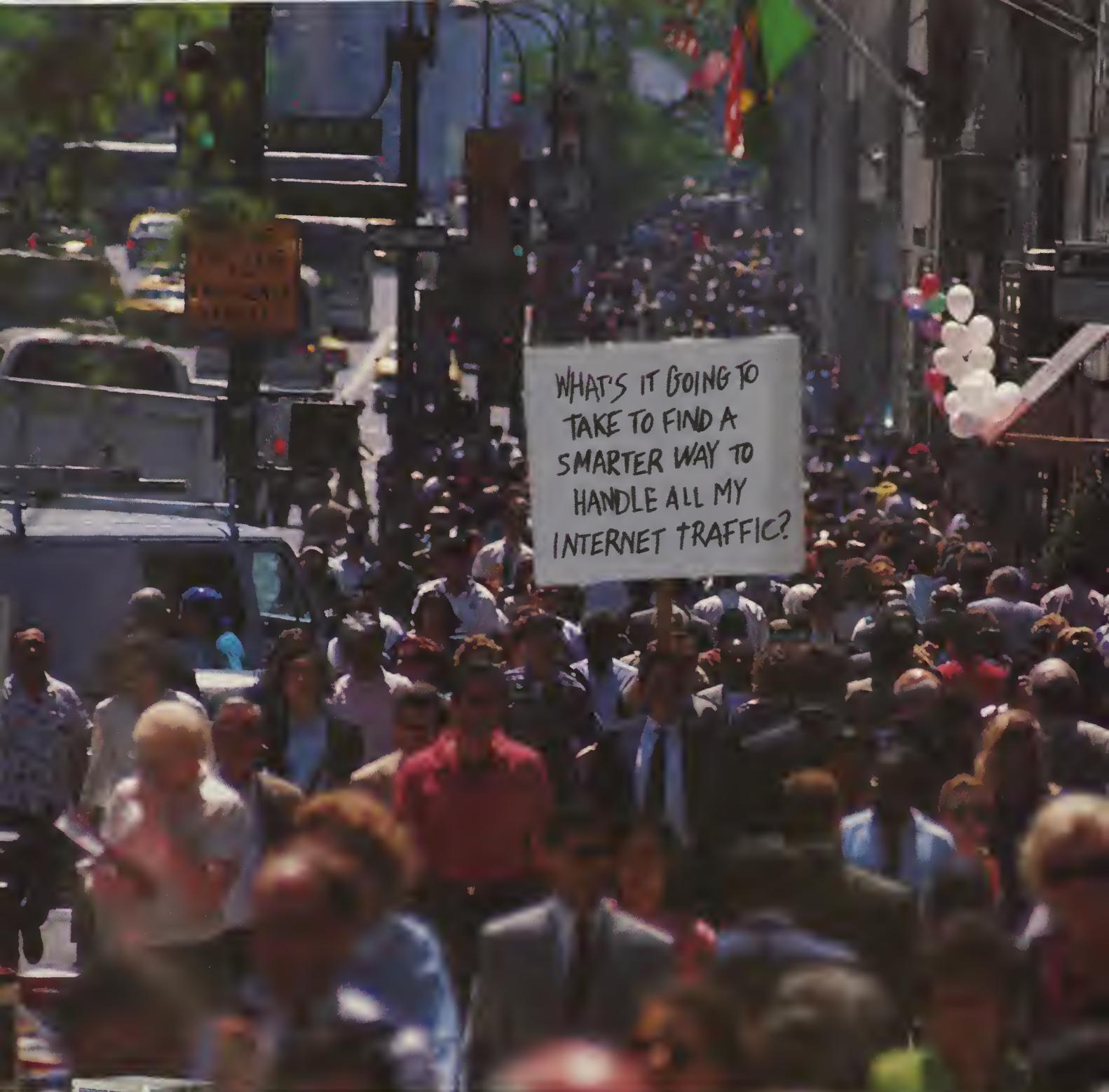
Further, if voice over IP or fax over IP has life, it will show up first in end-user empowered applications, not deployed networks. By this I mean that we'll see products that allow a small company to buy TWO units, put one in one office in Carlsbad, another in a second office in Kyoto, and send faxes or talk voice and beat the long distance charges without any

action on the part of the ISP at all. If this takes off, voice over IP has life. If it doesn't, I'm not sure any amount of fixing will help unless it is ultimately not detectable whether you are on circuit or on IP. Vienna Systems IPShuttle product is an example (www.viennasys.com). You take two of these boxes and plug one in at each location. You can then plug in an ordinary telephone and make and receive calls without any personal computer at all. Companies with Internet con-

nnectivity in two geographically disparate offices would use these to cut communications costs. The boxes are about \$599 each, which is pricey for what is saved. But that's the idea. Smaller companies are precisely the ones that would be attracted to these specific-use shunts around the long distance telephone meter, and obviously international applications would pay off sooner. Watch this space for a clue as to what will happen with voice over IP.

*Jack Rickard
Editor Rotundus*





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ITGs KNOW JACK

Jack,

re: <http://www.boardwatch.com/main/98/apr/bwm1.html> [Editor's Notes from the April 1998 issue]

God bless you for recognizing us. As you stated, we don't have a name yet, and because YOU identified the need, if you would be as so kind to bestow a title unto us, I'll inform board of directors of we are, and have HR print new business cards for us tomorrow.

I mean, you gotta do it! My mom is approaching her golden years, and she keeps asking me what do I do for a living! I mean, she's really mad, and thinks I'm evading her: "I don't understand you - you make 17 times more than your father did when he retired, and you're only 33. When I ask you what you do at work, you start with all your technical jibberish... I don't understand what has happened to you."

Sincerely,

Richard G. Windmann
"Internet Technical Guru
or ITG," Telegroup, Inc.

BTW: I know Jack. The people CCed might not know Jack, but come to think of it, I know one of them doesn't know Jack.

Richard:

You are legion. And you're at least as important to the operation of this network as the more public ISPs. But you're nameless. The nameless legion of the Internet.

We call you "internal ISPs" or just "Internet Technical Gurus" - ITGs. You can tell who you are pretty easily. If the

Internet connection goes down, your voice telephone starts making noises. It reminds me of a precise and pointed bit of poetry - quite dated but still applicable.

*I do not run the railroad
I cannot ring the bell.
But let the damn thing jump the track
And see who catches hell!*

We love ya man.

Jack Rickard

*PS. Mr. Windmann is referring to a subscription promotion from about five years ago - "If you don't read **Boardwatch**, you don't know Jack." It's been copied rather widely to our profound amusement and delight.*

♦♦♦

PAYMAIL AND FREEMAIL

Hello.

<standard rave> I am of course a great fan of your magnificent magazine. I'm a technical dabbler more than anything more hardcore, but enjoy your opinions and technical explanations anyway.</standard rave>

Okay, here's the 'but' part: Your pay-per-email idea hit me a bit hard this month. Not the concept, really. I am as disgusted by the unending sex and ponzi that comes at me through my email (I'm waiting for some sick soul to combine the two . . . gag) as anyone. I'm pretty certain that your scheme would put this obnoxious spam to rest finally. What worries me, though, is what effect this system will have on my own email activities. The price for this method seems just too steep. I mean, I'm by no means rich, and I've become rather addicted to sending email. In fact, I tend to be pretty active email-wise. I send a couple hundred emails a month (a couple edit-

ed humor posts a day to a group of about 40 friends + normal wear and tear). It won't take long at 32 cents a piece to break me entirely, or at least effectively shut me up.

Since I usually agree with you, though, I gave this system some in-depth thought. I mean, it isn't often that Jack the Great hatches an evil scheme that damages my ability to use the Internet. I came up with some insights that I think you may find interesting (or amusing). I reserve the right to be wrong, so I'd appreciate your input.

What I did was imagine what I would do if your idea was actually implemented. My original assumption was that I'd go to either pay-per-email or stick with freemail. I mean, either I accept spam, or I pay for my email, right? Well, actually, I think that's wrong. The best way to use the system would seem to me to be to use a combination of both pay and freemail. It's a simple filter mechanism, really: send everything to the trash that isn't either a pre-determined friend, or a pay-mail. That means that the email lists I like, I set up filters to allow them through. Ditto friends and family. Anything else either pays me, or goes sight-unseen into the garbage. It'd be pretty hard for a spammer to guess the specific filters I have in place for friends and family. I'm guessing it'd be functionally impossible. This way, I keep the freemail for the bulk of my activities, but don't have to shut myself away entirely from outside sources (like company mailings or the like from people who are fairly confident that I'd like what they're offering).

One last thought. The five cents per email earmarked for ISPs is a nice idea, but I don't see it happening. What it'd do most likely is open a price differentiation between ISPs that kept the nickel and those that didn't. ISPs do fine han-

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dling email at a profit today. If an ISP decided to keep the nickel, they'd open themselves up to their competitors who gave it back. Any ISP so cheap that it'd keep the full nickel per email is taking a not insignificant risk with their customers. Email servers exist (I know because I use one) that offer a permanent POP box with no restrictions for \$5/yr. I can only assume that they do so at a profit as they are staying in business and, at least in the case of my email box provider, adding extra services at no additional cost. Your pay-per-email system is likely to actually *ease* their expenses as their spam load and spammed-user complaints should decrease as this catches on.

Anyway, just my thoughts. Thanks for your time and keep up the good work.

Jacob Proffitt
Vancouver, WA

Jacob:

They're good thoughts. I've walked through this mentally from a number of different directions and I think you're reaction is actually quite what I would have predicted. We would definitely wind up with two e-mail systems, and I think that is a "good thing" up to a point. I'm philosophically opposed to forcing anyone to anything. So the premise is that the existing free e-mail system remain effective, with the paymail system offered as an adjunct alternative/supplement. In this way, everyone could use either, or both, to send and receive electronic mail.

But the outcome on wide acceptance of paymail would be inevitable. This is a variation on the "penny per poem" theme that has run through the online world since inception. It wouldn't be fifteen minutes before individuals would be advertising "detailed plans for your own thermonuclear device" using free e-mail. All you would have to do is send e-mail to their paymail account, which would have an autoresponder to send the plans. The unfortunate side of this is that it would dramatically increase the differentiation of the two e-mail programs. Spam would actually get WORSE on the free e-mail system, in contrast to the paymail system which would ostensibly be spam free. At some point, I predict you would simply quit checking the free e-mail pop account as it would be too much trouble to deal with.

One of the interesting reactions to this is the number of individuals who note that e-mail can be handled much less expensively than 32 cents. Duh.... In fact, it demonstrably can and does work quite well at flat rate - ergo the problem. The concept here is to develop a barrier price that makes spam quit working economically. In doing so, we might as well structure it so that there are stakeholders across the realm - including ISPs. In doing so, we rather accidentally create a funded, stable clearinghouse for electronic money ideally suited to micropayments.

One of the key features is that legitimate use of electronic mail is substantially less expensive than commercial use. If you send 200 electronic messages per month, if you sent ALL of them, including to your 40 friends, the send cost is \$64. But if you are sending 200 messages and receiving none, quit sending. If you will look closely, you'll find you're also receiving some. If you receive 200 messages, you would be credited \$30, reducing your costs to \$34 per month. But someone sending the same 200 messages as a commercial spray would incur the full \$64.

Even then, you note that you're basically running a mailing list. I think there is a very interesting play in the bushes for mailing lists. Reverse the charges. If the recipient of a mailing list paid 32 cents for received message, and the sender received 15 cents of that, a very interesting thing happens. The list manager gets a powerful incentive to make sure every message has some value, because more than a few junk messages would cause defection/unsubscribes from the list recipients in a hurry. But if they succeed, there is a huge publishing dynamic working here. With a thousand subscribers, a list manager would pick up \$150 PER MESSAGE that went out. I'm not sure how this would ultimately play out - perhaps no lists are worth 32 cents per message. But perhaps some are.

Mailing lists using the current freemail system would not likely change, and in fact I would look for co-lists that appear in total in freemail and in digest form or in moderated form on the pay side. While it can be difficult to filter out spam, it is quite easy to filter IN mailing list mail to a specific folder in your freemail system. In fact, you can use freemail to receive lists, route each list to a different folder, and route ALL else into the delete folder. It would work quite well.

I think very quickly the paymail service would pick up a certain status panache. "I'M TIRED OF THIS AND I'M NOT TAKING IT ANYMORE" would be the theme of those retiring to paymail entirely, and I would look for some mail weary net personages to simply say, "If it isn't worth 32 cents to you to send it, it probably isn't worth much more than 32 cents to me to read it either. Send me your 32 cents worth."

I don't see ISPs refunding it. The clearinghouse would simply issue a check to the ISP for the aggregate amount and it would cost them rather much to go through and break it down to credit each account for a nickel per message. And what's the gain? They would have no control over the remaining 27 cents.

And for those against, the freemail swamp still operates about as well as it ever did.

So your dual use of both systems is exactly what I'd expect to see. Over time, I would also predict you'll grow accustomed to the relatively small costs and greater convenience on the paymail side and find more and more of your correspondence moving there - even including friends and family. Or do you want to explain to your mother why she's NOT worth 32 cents?

Jack Rickard

♦♦♦

I'LL BE READY IN THREE SECONDS

Jack,

Congratulations on an excellent K56-Flex versus x2 performance article. **Boardwatch** has done a great job characterizing proprietary 56K modems! I have been waiting for it.

I participated in the development of the V.90 standards (and in most of the previous modem standards going back to V.22). During these meetings I was amazed at some of the comments from the Rockwell engineers. They publicly stated at one meeting that 'robbed bit signaling' (there was a slightly incorrect term in the **Boardwatch** article) did not occur in the North American network! I was also impressed with several technical papers from 3Com engineers which showed a real depth of V.pcm operational understanding. Identifying the



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change in temperature of modem transformers, during operation, as a small source of V.9cm modem performance degradation, was one I recall. It was difficult for me to imagine that such different engineering staffs produced modems of similar performance.

You may be interested in some more recent technical information. Over the past few standards meetings it has come to light that the start-up procedure used by K56Flex modems, V.8bis, adds an extra 3 seconds delay when auto answering any modem that starts with V.8 (i.e. all V.34 modems). x2 modems use the V.8 start-up procedure and do not have this delay. Of course, 3 seconds on each V.34 call, over every K56Flex port, at a large ISP, can be a significant cost.

This delay is not Rockwell's fault. The designers of V.8bis, myself included, overlooked this problem. However, we have now developed a revision to V.8bis to fix this error (reduce the 3 sec delay to less than 0.5 sec). However, Rockwell has come out at a standards meeting AGAINST this proposal without offering any technical grounds.

In addition, the changes to V.8bis support the use of V.8bis to improve Internet Access Time that were explained in the **Boardwatch** article "Quicker Dial-up Internet Access", November, 1997.

I hope you can find space in **Boardwatch** to discuss this issue soon. Otherwise a reasonable solution to a small but real problem may not occur. Formal standards committees require consensus. Just like good engineering requires good independent testing.

I look forward to **Boardwatch's** characterizations of different V.90 implementations.

Ken Krechmer
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Technical Editor
Communications Standards Review
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(<http://www.csrstds.com>)
Technical journals reporting on formal
WAN standards work-in-progress

Ken:

Thanks for the input. It matches my anecdotal experience with the two camps as well. We did notice the V.8bis problem rather pointedly as the USR modems could as a result crank more calls more quickly. I don't know if this 3 seconds is

terribly important to end users, so beyond noting that the x2 modems simply dialed and connected faster, we didn't go into it any deeper. We found that it took three K56flex modems to crank the same number of calls as two x2 modems. But again, whether anyone really cares is open to question. I'm glad to hear a fix is in the works.

Despite Rockwell's assurance quite publicly that they had "tons" of test data refuting our findings, we haven't seen it, nor had any contact accepting our offer to set them up to create tons of data if they "didn't" really have tons of test data.

But we are fortuitously facing a move here at **Boardwatch** that takes us to new and larger space in a different area, with a very different central office switch and network connections. We plan to rerun the tests and compare to the original location to determine somewhat empirically if their claims regarding our methodology have any merit or not. If they are, I'm quite willing to fall on my sword in public. If they aren't, their credibility will rather take another severe dive. It's all "modem test data spring '98" to me either way. It's slow, but inexorably and rather inevitably we can approach some definitive answers here over time.

We tried from the beginning to work with them on methodology, and instead of working toward that, they elected public relations damage control as the game du jour. I found that an odd reaction, and a strategically puzzling one. They have hundreds of engineers. And they prefer a one-on-one public print/e-mail battle with Jack Rickard? It's not a war, it's a test, and a rather simple-minded one at that. And we simply don't have a vested interest in the outcome.

Jack Rickard

♦♦♦

POP GOES THE NETWORK

Dear Jack,

We are a local ISP in Tennessee and Georgia. We buy nation wide access from PSInet. So that means 3 of the 200+ pops we have access to are owned by Voyager Online. So I do not understand why we have a call completion rate of 78.09%, avg. speed of 31900 and a value of 109.99 when PSInet shows a call completion of 94.05%, avg. speed 30540 and a value of 124.59. Since we use their pops and even our own 3 pops have the

same equipment how can we have such a low rating?

Chris Edwards
President
Voyager Online, LLC
chris@vol.com
<http://www.vol.com>
800-864-0442
423-209-2929

I'm not sure Chris. Your average speed is pretty close to the granularity we can achieve with this test. But call completion rates are a function of how busy a POP is, and this can vary dramatically based on metropolitan location even on the same network. We've also found that some networks do rent POPs, and operate POPs for their own network, often at the same location, but they are not necessarily common ports. So I'm not being disingenuous when I say I'm not sure.

Given our experience with this test and the number of calls we can generate rather quickly, I am inclined to advance the number of ports per ISP for the next round - perhaps ten per ISP instead of five. It would be interesting to see if this gives us better granularity on call completion rates. At this point, I would predict "not significantly." But it's sufficiently unclear to go to the expense of trying it.

Jack Rickard

♦♦♦

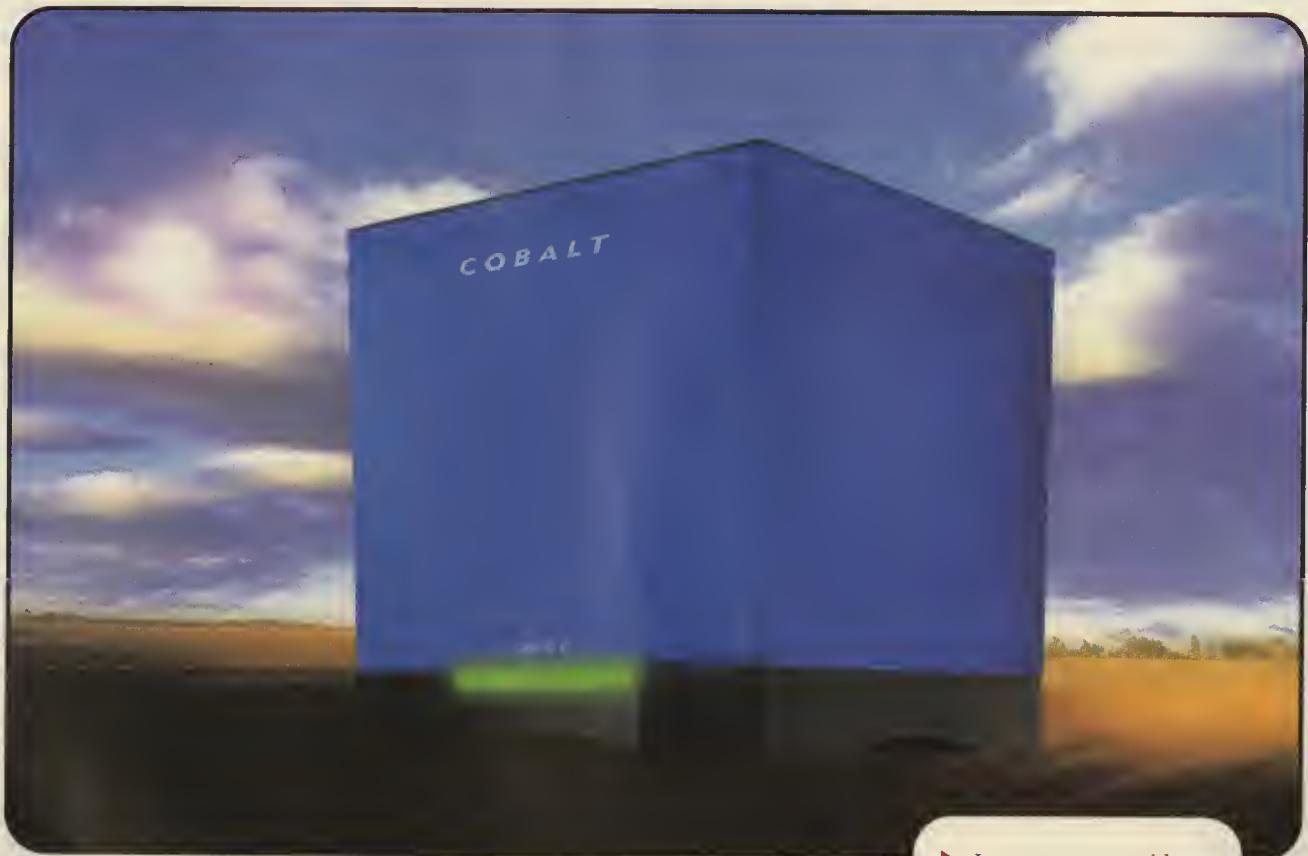
V.90 HURT MY CONNECTION

I read your article on the net about the US Robotics 56k technology. I am a current user of the US Robotics modem.

The main purpose of this e-mail is mainly for informational purposes. I used to connect to my ISP with my x2 modem and it used to work great. Really fast and reliable. I used to get download speeds (Netscape Communicator of up to 6.0K) which is really great. The connection 90 percent of the times used to be 54,666 bps and sometimes 52,000 bps or the lowest 50,666 bps. It was an extreme rarity that the speed would drop below 50,666 bps.

As the 56k standard was declared, I downloaded the v.90 upgrade for my modem from the US Robotics site and flashed my modem. Since then I am facing tremendous problems with my modem connection and the speed of my modem. I get connected max at 50,666 bps. The point here is not to complain

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about the speed drop, but the overall surfing and the downloadable speed. Now when I download I get a max of 3.6K or around that. The surfing speed has drastically reduced. As a matter of fact, it is slower than a regular 33.6 connection. This is not a conceptual difference. I have tested this modem on other computers and the same result is shown.

Even though that problem may not be a hindrance, the main problem is the connection. I have to literally connect approx 5-6 times to get connected to my ISP I even changed my ISP to my friends 56K x2 ISP and the same problem occurs.

After facing all these problems, I contacted US Robotics for help, asking them to give me the old flash x2 code for my modem. On this I get to hear that it is not possible to help me in that case.

I have tried all means to improve my connection. After reading your article about the standard, I would like you to know how distressful and a waste of time it is to upgrade to v.90 standard if you are receiving stable connections.

If there is any way you can help me in this matter I will be highly appreciated.

Looking forward to hear from you....

Regards
Amrit Sadani
amrit@wt.net

Amrit:

We are in a very chaotic period of modem software, and the software has become somewhat complex. Every fix fixes some and breaks some.

We faced a similar situation with our tests. The first question everyone asked was "are you using the LATEST firmware?" It was a trick question of course. We were. The reaction was of course "Zoom 1.2 is hosed, you should have been using the PREVIOUS version - everybody knows that." We can't win for losing on this topic ourselves.

Long term, I think you'll be much happier with good V.90 code than what you had. But it is not only entirely possible, but Kharmically mandatory that you go through a bad version or two of V.90 before reaching Nirvana. I don't agree that the lesson is "don't upgrade." But living on the bleeding edge is not always an advantage either.

I am disgusted at the US Robotics reaction. They know better than most there are problems in the evolution of modem software, and in fact have V.90 code out for client modems in some cases before enabling the ISPs with the upgrade. That they would refuse to make the prior version available for download, in an effort to force everyone to universally upgrade per their program, is totally inexcusable behavior and I cannot imagine any satisfactory explanation for it. In my view, they should as a matter of practice make the prior version available for download from their web site WHENEVER releasing a new version, and all other modem developers should as well.

Jack Rickard



BACKBONE PERFORMANCE AND CABLE MODEMS

Dear Jack;

I've traded some email with you in the past (I run a 18,000 sub ISP) and remain a big fan of Boardwatch and your candid approach to the issues facing our industry. The purpose of my note is to share some of my thoughts on two recurring issues which appear regularly in your editorials.

1. The Backbone debate - This one often reminds me of a boys high school locker room where the main topic of discussion is "mine is bigger than yours" with little care taken as to the facts. I enjoy your willingness to continually point this out however I feel a very important issue (one which will get ever more significant) is being overlooked in the backbone debate.

While it's true that no one company can dominate bandwidth, that is more capacity can always be built, bandwidth is not the real issue, it's performance. In particular typical end to end packet performance, my pc to your web site and back. As we all know there are many variables which affect this performance, time of day, amount of traffic, alignment of the stars, El Nino, etc. however it has been our experience that most of the delays i.e. degradation of performance relate to the number of handoffs between backbones (ex AGIS to DIGEX to Sprint) and in particular the number of stops (no pun intended) at public peering points.

When packets ride one backbone end to end the difference in performance is

substantial and therein is the point that I feel is being missed by everyone except Mr. Sidgmore. If you carry the majority of the traffic on your own backbone you can deliver better performance which brings more people to your backbone which (provided you expand capacity and nobody is better at it than those guys) in turns increase the percentage of traffic which rides your backbone end to end which in turn increase the performance which...I think you get my point it feeds on itself.

UUNet already handles a very high percentage of the backbone traffic and with their aggressive buildouts, the MCI merger, private peering arrangements et al this percentage will only increase. Furthermore, we have used most of the major backbone providers and our experience is that no one is close to these guys on the network side. What makes this concept even more significant are all the new services which are coming online, IP telephony, IP videoconferencing etc. All these apps demand low latency high performance backbones...if the packet originates on backbone A and travels on backbone A to the destination IP telephony works great, if it goes through MAE east it doesn't. I'm wrong on a daily basis Jack so don't be shy about telling me what's wrong with the above.

The second point is cable modems. Our parent is a large privately held cable MSO (family held, I'm related so I'll admit to being less than objective) and while the vast majority of our ISP customers are dial-up I have to say your continual bashing of cable companies and cable modems is out of character i.e. you seem to usually get the facts first and then take a stand.

My point is this, cable modems work and more importantly they work real well. Cable companies are activating more and more return plant every day for two way service and more and more cable companies are adapting the telco return model (most residential internet sessions are one way events anyhow - URL's upstream real data downstream) and delivering QAM64 service 27 meg downstream.

Even the modem big boys 3Com etc are getting into the act. While everybody likes to make a big deal about the shared nature of the cable modem service let me tell you any cable operator worth his salt has multiple fibers running to a node if enough people in the node take the service that contention is

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an issue it takes about two days (thanks Fedex) to get the lasers in to light two more fibers to that node creating 2 250 home nodes as opposed to 1 500 home node -presto you just solved your contention problem in that node and you know what the best problem we could have is the need the need to break them up into 4 125 home nodes because that means the revenue stream is tremendous.

Right now our take is that price is the main thing holding cable modems back, specifically the price of the modem which needs to be recouped. Once the modems go retail and they get off the cable company balance sheet there is no real reason that cable modem service needs to cost much more than dialup, remember no \$600/mo. PRI circuit required (at 9 to 1 ratio \$3.00/cust/mo.) plus the RBOC BS of no facilities available etc.

I'd welcome a chance to discuss this more with you if have an interest, we've got 33.6 x2, Kflex, telco return cable modems and two way cable modems running so for the moment we've got most of the bases covered. (By the way stick to your guns x2 blows away Kflex and all things being equal we love Livingston)

Lastly, I enjoyed Baltimore (not your most organized event) but San Fran is the varsity event and I'm looking forward to it. Hopefully I'll remember to have David Silver introduce me to you. Thanks for your time Jack and many thanks for your great magazine.

Regards,

Peter Hopper
C.O.O.
Helicon Online L.P.

Peter:

That the backbone performance problems are in the Interconnect space only makes sense in arrears. After our testing for a year, I'm actually convinced you are correct. But as I recall, it was NOT obvious a year ago.

In fact, we currently still hear from engineers in networks, and specifically MCI, about end to end performance within their network and how it refutes our findings with Keynote. It simply doesn't. No one wants to purchase access to the UUNET network or the MCI network, they want access to the "Internet." This is viscerally obvious - there is no assurance that the site their customers want access to at any particular moment is ON their

network, it may and to some degree probably will be on someone else's network. And the customer has a right to expect no deliberate differentiation in performance between "on net" and "other net" sites.

UUNET does do an excellent job of network engineering. So does MCI. My personal observation is that the concept that WorldCom will seamlessly unite the MCI network, the UUNET network, the CompuServe network, and the ANS network, is questionable to the point of comedy. They have actually a relatively poor history of melding past acquisitions, and it is my perhaps unqualified, but nonetheless strongly held opinion that the UUNET and MCI networks are both nearing, if not exceeding, the scales of operation possible with current technology. I do not think there IS a way available now to integrate them beyond the extant Internet integration they currently enjoy. Certainly they can increase the private interconnect between them to some degree and to some effect. Beyond that, I think it will be much more difficult than you imagine.

Your notes on cable are interesting. But you use the "F" word a lot (fiber). And I think that's very interesting. My skepticism regarding cable has little to do with node loading. It is that about 60 percent of the population has cable at all, it is primarily residential, and it is overwhelmingly coaxial cable. The much touted performance pilots, I would further note, are almost entirely fiber based - as you too note rather pointedly. The existing cable coaxial plant is much noisier than we had forecast, tuned much more asymmetrically than we had thought, and simply won't do Internet access in the way we had predicted. Any cable company that has fiber in any area can do a very good job of providing the connection. Unfortunately, that's about 5 percent of the cable installation.

Further, the technical connection is the least of the problem. Everyone that has participated in the pilot programs has been delighted with the product support. Some report as many as three techs coming out to their home and spending half a day with them to get it running. That makes for very successful pilot programs, but is horrifically expensive to deploy on large scale. My personal experience with cable companies is that even to support existing television the help desk almost universally issues a busy signal, and that cable companies track technical problems with pin maps on the wall that record trouble calls until a geographic

pattern shows them which junction box is the culprit. I seriously question whether cable companies are culturally suited to providing the kind of tech support that dialup ISPs provide every day.

Finally, there is the pricing matter. I find it terribly likely that a cable connection at \$40 per month could move a lot of businesses and power users down from T-1 and fractional T-1 solutions, but the cable companies want the volume and residential footprint that the dialup market provides. I guess I'm somewhat skeptical that large numbers of dialup users paying \$20 per month are going to jump on a \$40 solution without question. I think the dialup market is a tad more price sensitive than the cable people seem to believe. And I don't think the modem price is a big part of this. Standard volume/price equation. I would expect to see enough dialup users jump on it quickly enough to crater it, but no rampup after that to true volumes.

So I do remain a cable skeptic. At the same time, when can you guys hook mine up? I'm ready.

Jack Rickard



NOT HAPPY WITH CABLE

A few months ago, GTE started offering "Warp speed" internet access in my area (Thousand Oaks, CA) and also in the Clearwater, FL areas. They touted their service with such catch phrases as "even ISDN doesn't compete" and "you won't believe your eyes". At the time, they said that their service delivered the full driving force of 4 Megabits per second downstream and upstream, an incredible deal.

So, I called them to order their service. Boy, was it an underwhelming experience. I got an imposed hard-limit by the GTE service. What they do is they program the modem's BIOS to limit its speed to about 130 kilobits/sec, roughly 17 kilobytes/sec in the real world. The modem they used, the LANCity by Bay Networks, has this feature.

Obviously, this measly 17 kilobytes/sec is NOT what a cable modem should be offering. It's more in the realm of ISDN than a high-tech, emerging broadband network. I've seen cable modems get upwards of 100 kilobytes/sec and 200 kilobytes/sec. So, I started a web page that described GTE's service and how

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slow it was. I used a parody logo, which had the GTE logo and large "NoWind" graphic, as opposed to GTE's logo, which said "GTE WorldWind". I was threatened with legal action, and my service was disconnected. (the cable modem service).

I would just like people to know that all cable modem services are definitely not equal. Some promise "warp speeds" and "you won't believe your eyes", but the reality is that there are always corporations looking to get rich off of short changing customers of service.

GTE was, in effect, competing with itself, because they offer all four types of internet services. Dialup, ISDN, multi-megabit services, and Cable modems. They're forced to downgrade on their consumer technologies, dialup, isdn, and cable modems, as to not drive itself out of its own markets. This is a great example of companies spreading themselves too thin (such as Microsoft) and passing off the problems to the consumer.

My WebPages is at <http://www.psilon.org.com> if you would like more info on this, and my friend has a wonderful table-of-comparison of REAL WORLD cable modem speeds at <http://www.pobox.com/~faust/soapbox/speed/table.txt>

Notice how GTE populates the bottom of the list, right next to the regular old dialup-modems.

GTE has three levels of service. Force 5, Force 6, and Force 12. Or as my friend Bill likes to call them, Slow, Slower, and Slowest. Force 5 delivers a whopping 56 kilobits/sec (which is barely faster than today's 56k modems!) Force 6 delivers a whole 64 kilobits/sec, and Force 12 delivers an earth-thundering 128 kilobits/sec (which is barely in the ISDN league).

Get educated about broadband before making a decision to buy. I think that **Boardwatch** take the responsibility of telling their readers this. Although most services such as @Home and Road-Runner and Rogers Wave do deliver as promised, many (such as GTE) don't.

Thank you

Mike Hughes
Thousand Oaks, CA
wkh@altonet.com

Mike:

I think you've done it somewhat better than I could. I would add the following:

*There is no free lunch. Everyone has heard of the "last mile" problem for so long that the assumption is that if you could solve it, it would be nirvana. There are two problems with this. The first is that like cocaine, the Internet can only be "cut" so many times. If you could deliver 1.544 Mbps to 100,000 customers over the last mile, requires a lot of point bandwidth. We've found about a 4:1 multiplex of dialup customers works pretty well - in other words you can support 4 dialup 28.8 Kbps connections with 28.8 Kbps of upstream bandwidth in large quantities with little noticeable degradation. So you are looking at 100,000/4*1.544 Mbps or a little less than 40,000 Mbps. There's not that much bandwidth in the universe. Cut it to 256 Kbps, and you're still looking at 7,000 Mbps or about 175 T-3s. Again, who works the calculators at these companies?*

Second is, even if you COULD develop a network that would do all that internally, the Internet itself in aggregate doesn't work that well. Web pages transit at about 12 Kbps per second no matter how fast YOUR connection is. Going from the 128 Kbps Force 12 to a 45 Mbps T-3 to your desktop isn't going to give you the increase in perceived speed that you expect. Pages just can't make it across the core that fast. Add 100,000 people with T-1s, and it will work slower yet.

The cable model has some merit internally, and I don't think most people perceive just what is at work here. Assuming a fiber network WITHIN the cable world, and assuming eventual mastery of the customer support problem, IF the cable companies could deploy fiber, and sign up a lot of people to access the Internet at high speeds, it would probably lead to some disappointment initially among the user base. But if a largish market could be aggregated, several million captive cablenauts for example, the cable companies could offer web hosting and web mirroring services at fairly hefty prices to those who wanted their web site to appear to those users with alacrity and performance by being hosted ON the same local fiber network. This creates a kind of a supernet subnet of the Internet. You can be on the good fiber network, or on the old mealy cranky Internet. You have access to everything either way. But some access is more equal than others. And the theory is that cablenauts will favor well connected web space sold by the cable company because it will be faster.

The problem is getting over the hump. While they're trying to form the super-

subnet, so is everyone else. Picture 300 guys trying to choke a jello snake to death in a room full of Wesson oil. And meanwhile, only three or four of those guys can operate a four-function calculator well enough to get the same answer once in a row.

Bottom line, I doubt the GTE performance experience you had was nefarious or by design. They're trying their very best to be the one to get a stranglehold on the jello snake. But he's a slippery sucker.

Jack Rickard

AOL CENSORSHIP

Jack:

In "Big Board Briefs," Wallace Wang wrote AOL censored e-mail containing the word "breast" and deleted messages that contained foreign languages. Actually, it was even worse in the news stories I saw. It was posts to an AOL bulletin board that were censored for foreign phrases—and it was profiles members created to identify themselves that were deleted if they contained the word "breast". (Even if they were identifying themselves as breast cancer survivors!)

Though both policies were consistent with AOL's history, they're also an extremely publicity-sensitive corporation, and both positions were reversed after negative news stories. But the censorship lives on. AOL's chat rooms still prohibit the creation of any chat room if its name contains verboten character strings like "boy" or "GIF". If you wanna start an AOL chat room about your GameBoy, or Christmas Gift Ideas — er, you're outta luck!

In the case of the navy sailor, Wang missed the most damning detail of all. The New York Times reported AOL ultimately cancelled the sailor's account, several weeks after he had begun contacting members trying to publicize AOL's actions—but one day after the Times ran a story publicizing his fight (<http://www.nytimes.com/library/cyber/week/011198navy.html>).

Maybe it's just as well. With their bizarre policies on privacy and censorship, I can't imagine why anyone would want to stay with AOL anyways...

[If you'd like to read my round-up of news stories on the event, it's been archived by the webmaster of the "Why AOL Sucks" page. (<http://www.aolsucks.org/list/0086.html>)]

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David Cassel
AOL Watch
<http://www.aolwatch.org>
Berkeley, California
510-548-6645

David:

I won't begin to try to explain or fathom the inner workings of the AOL corporate mind. First, I can't. Second, trying to take that many showers gives me dry scaly skin. Fortunately, it's easy enough to vote with your feet. There may be a market for a safe, clean e-mail world. I watched up close as Prodigy tried this years ago, and it only brought them woe. I think it will do likewise for the AOLians.

But I do find the attempts to muzzle the naysayers such as yourself particularly odorous.

Jack Rickard

♦♦♦

AOL SPAM CONTROLS ARE INCONVENIENT

Jack:

I read the column about bulk e-mailers vs. AOL in the March issue. Maybe NOIC should consider my rights. I do not want sex ads, get rich quick schemes, and other unsolicited e-mail. I do not care one bit about their so called small businesses. I initially tried sending 'remove' to the addresses to get my name off of these lists. In 100% of the cases the return addresses were phony and mail was returned as undeliverable. I even tried calling some of the 800 numbers and asking politely to be removed with no results. This tells me that the so called businesses that NOIC and others represent should be called SCAM. Anyone dumb enough to send money to these individuals is going to lose it.

So, I took advantage of AOL's mail controls. While it stopped NOIC and their so called businesses, it also had an undesirable result for me, too. I cannot receive e-mail unless that individual or organization is on my list. So if I want information from a company I cannot send them e-mail for a quick reply. I have to pick up the phone and call them for information and wait for it from the Post Office.

Taking the mail controls off for just one day before I wrote this resulted in a mail box full of unsolicited mail. Not one of them was from a legitimate company. Quite frankly these companies are not paying me for my time, I see absolutely

no reason why it should be wasted with their unsolicited crap. My mail controls were reset to restrict all mail.

Sending the e-mail to **Boardwatch** is all fine and good, but you cannot reply to me because I do not know the specific e-mail address that you might use. All because of SPAM e-mail.

To the NOIC -- "You are violating my rights to use my e-mail account. I have to pay for my e-mail account, not you. Since you did not ask my permission you are deliberately wasting my money. Because of the ilk that you represent I have to live with crippled e-mail to prevent junk spam that I do not want. If your business and the ones you represent are legal (which I doubt) then use the US Post Office to send junk mail at your expense, not mine."

Mark Griffin

P.S. Your staff puts out an excellent magazine. Keep up the good work.

Mark:

I'm sympathetic to the problem and agree on all counts. I do not look for it to get better until we either legislate SPAM out of existence and/or remove the underlying economics. Being outraged helps, but not much.

Jack Rickard

♦♦♦

US WEST, BELL CANADA AND LADS

Dear Mr. Rickard,

I just received my March issue of Boardwatch. (I bought a subscription. No moochers here.) The magazine, as always, was very informative. What really caught my attention was the article concerning the fight with US West over their elimination of the LADS tariff. It bears an eerie resemblance to the fight Canadian ISPs are waging against Bell Canada.

In case you're not up to speed with this, six months ago Bell Canada filed and was granted a tariff for xDSL. Bell is a government sanctioned monopoly and is the only one who can supply this service to ISPs. This established the cost of the service at about \$200.00 per month, to be charged to the Internet provider. Four months later, one ISP, Simpatico, (owned by Bell Sygma,) announce ADSL service

for \$70.00 a month. Bell is funneling money from one pocket to the other.

ISPs from across the country are starting to band together, forming organizations to combat Bell's anti-competitive practices. One such organization is the Responsible Internet Service Companies (RISC) which was created to fight the ADSL issue specifically, (of which I am a member.) RISC has written an open letter to John Manley, Minister of Industry, requesting a parliamentary inquiry into Bell's predatory practices.

My question to you is do you have any plans to discuss this issue in next month's publication? I believe that we have to bring this to the forefront.

Thank you for listening,

Stephanie Donovan
Account Manager
Achilles Internet

Stephanie:

Bell Canada and the telecom environment in Canada is an even rougher game than it is down here. I don't know which month's publication we're on here, but we do continue to cover the dance between telcos and ISPs, and ISPs that are now becoming telcos, and indeed telcos that are now becoming ISPs on an ongoing basis within these pages.

Jack Rickard

♦♦♦

RG-58 NOT FOR TV

Dear Jack,

Just thought I would point this out since I have recently seen the error in two different issues. RG-58 is 50 Ohm coax cable and is NOT used in CATV. All CATV cable is 75 Ohms which generally offers lower loss. The older RG-59 style has largely been replaced by an RG-6 variant which is slightly larger in

diameter and has lower loss, especially at the higher frequencies (channels).

Ron Lavallee

P.S. Love the mag!

Ron:

I stand corrected.

Jack Rickard

♦♦♦

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JUDGE ISSUES ORDER IN NETWORK SOLUTIONS SUIT

A District Judge in Washington, D.C. issued an order dismissing nine of the 10 claims made by domain name registrants against Networks Solutions, Inc. (NSI) and the National Science Foundation (NSF). In the same order, the judge also ruled that the Preventative Assessment charged by the NSF as part of the domain registration fee, is an illegal tax.

Nine plaintiffs, three individuals and six corporations, filed suit against NSI and the NSF alleging ten claims related to the cooperative agreement between NSI and the NSF to register domain names.

The first claim alleges that the Preservation Assessment—charged and collected by NSI (www.netsol.com) and placed in the Intellectual Infrastructure Fund for the NSF—is an illegal tax because Congress did not assess or ratify the fee, as required under Article 8 of the Constitution.

Counts two through five, and count seven allege the fees charged by NSI are in violation of various government regulations, which make them illegal. Count six alleges NSI violates the Cooperative Agreement because it will collect renewal fees after the expiration of the agreement.

Count eight alleges the cooperative agreement itself violates Article IV, paragraph three of the Constitution, which governs transfers of federal property. Finally, counts nine and ten allege the agreement between NSI and the NSF creates antitrust violations under the Sherman Act.

The judge sided with the plaintiffs on the first count, and declared the Preventative Assessment an illegal tax. The judge found that the assessment was not a fee paid by the registrants, but a tax not imposed or ratified by Congress, in violation of Article 8 of the Constitution.

The judge sided with the defendants on counts two through ten, and dismissed those counts. The judge ruled that: "The NSI fees are not collected as revenue for the federal government; they are paid pursuant to a voluntary contract between two private parties, and they are paid as value for services rendered and received." The judge also ruled that NSI's fees do not violate any of the offered government regulations because of legislative exemptions and the private nature of NSI's fees.

As for the antitrust allegations, the judge ruled that NSI has immunity from antitrust prosecution under the federal instrumentality doctrine, which grants antitrust immunity to private parties acting in compliance with a clearly articulated government program.

The judge's written opinion and order is available at www.bode.com/nsi/nsi804a.html.

GLOBAL CROSSING EXPANDS NETWORKS



Global Crossing, builder of an undersea, fiber optic ring connecting the U.S. and Europe, recently announced an agreement with Qwest Communications to exchange capacity, and the formation of a joint venture to build an undersea, fiber-optic network to Japan.

Global Crossing began construction of an 14,000 kilometer, undersea, four fiber-optic, self healing Synchronous Digital Hierarchy ring network (called Atlantic Crossing 1, or AC-1) connecting the U.S., the Netherlands, Germany, and the United Kingdom. The network combines Wavelength Division Multiplexing, and Erbium Doped Fiber Amplified technology.

AC-1 is initially provisioned to provide 40 GB of bi-directional transport capacity, shared over four fiber pairs. Phase One, scheduled for completion in May 1998, will connect the U.S. and the U.K. Phase Two, scheduled for completion in November 1998, will connect the U.S. and Germany. Phase Three, scheduled for completion in January 1999, will connect the U.K. and the Netherlands. Phase Four, scheduled for completion in February 1999, will connect the Netherlands and Germany, thus completing the ring.

In the first announcement, Global Crossing (www.globalcrossing.bm) and Qwest (www.qwest.com) acknowledged they entered into an agreement to exchange capacity between Global Crossing's undersea network to Europe, and Qwest's planned U.S., fiber optic network. Qwest will receive four STM-1s (STM-1 is the European equivalent of an OC-3 SONET circuit - 155 Mbps) on Global Crossing's AC-1. Global Crossing will receive capacity between U.S. cities on the Qwest Macro Capacity Fiber Network.

The second release announced that an international joint venture will construct and operate a 20,000 kilometer, subsea, fiber-optic cable system (dubbed Pacific Crossing, or PC-1), which will provide a high capacity telecommunications link between Japan and the U.S.

The joint venture consists of Global Crossing; Tyco International, the parent of Tyco Submarines Systems; KDD Submarine Cable Systems; and the Marubeni Corporation. Tyco and KDD Submarines will construct the PC-1 cable.

The U.S. to Japan cable system is expected to commence commercial service within 24 months.

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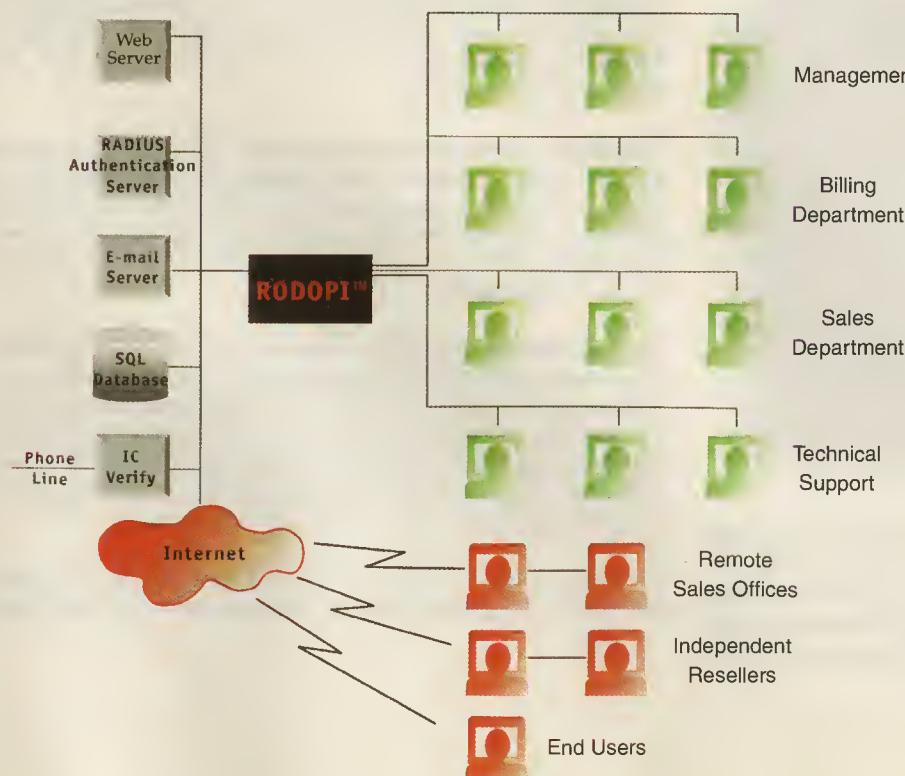
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EARTHLINK TOPS 500,000 SUBSCRIBERS, ANNOUNCES REVENUES

EarthLink Network, Inc. announced its increased subscriber base for 1997, and the first quarter of 1998, and revenues for the first quarter of 1998.

EarthLink said its subscriber base surpassed 500,000 customers for 1997. The company said it added more than 190,000 members in 1997, and added another 80,000 new subscribers during the first quarter of 1998, a 40 percent increase over the same time quarter last year.

EarthLink (www.earthlink.net) said the added subscribers further bolster its position as the largest independent Internet service provider in the world.

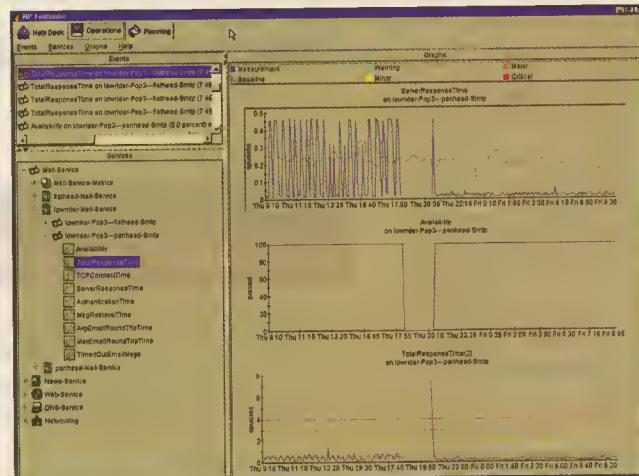
EarthLink said its increased first quarter subscriber base is in part due to innovative marketing programs, including its "Get out of AOL free" program. EarthLink waived its \$25 setup fee for former AOL subscribers and sent change of address notices to the former AOLers online contacts.

EarthLink also implemented a successful marketing campaign with SAM's Club by offering special pricing to the 21.4 million SAM's Club members.

EarthLink announced 1998 first quarter revenues of \$29.2 million, an 86 percent increase over 1997 first quarter revenues of \$15.7 million. EarthLink posted a first quarter net loss of \$6.4 million, down from a loss of \$8.4 million for the same period last year.

For more information on EarthLink, call 800-395-8425, or visit its web site at www.earthlink.net.

HEWLETT-PACKARD UNVEILS ISP MANAGEMENT PRODUCT



On March 3, Hewlett-Packard introduced Firehunter, its first volley into the ISP management market. Firehunter is an ISP management software program that allows ISPs to monitor network performance in real time, supply customer service representatives with up-to-date system information, and prepare business reports for future planning.

Firehunter collects performance, usage, and availability information gleaned from agents placed over the ISP infrastructure (POPs, the network, and server and application components). The agents can either simply collect system data, or create traffic to measure designated services. For instance, a Firehunter agent can send an e-mail message from one server to another to measure the performance of each server, and the travel time.

The data is viewed using a JAVA applet that runs on a browser. The user selects what information he or she wants to view in graph form, and can set threshold levels for performance metrics. Multiple level alarms can alert the user when thresholds are passed.

Firehunter allows operations personnel to prepare real-time system performance updates for customer service representatives. When a customer calls in to complain about a service outage or slow performance, the customer service representative can access the information supplied by operations personnel, and give the customer up-to-date information on system problems and expected repair times.

Firehunter also allows the ISP to collect performance, usage, and availability information over time to study trends and prepare future business plans.

HP advertises that Firehunter can be installed in 30 minutes, and the infrastructure agents run on HP-UX, Windows NT, Sun Solaris, Linux, and FreeBSD. Firehunter's Management Server currently runs on Windows NT, but Debbie Madden, HP's outbound marketing program manager, said the software will become available for other operating systems in the future. Firehunter is priced at \$14,950.

The Firehunter software is all JAVA, and was built from the ground up. Madden said HP representatives spoke to over 300 ISPs to get information on what features ISPs could use most. Sprint Internet Passport, GoodNet, and Front Range Internet are currently beta-testing the product. Madden said Sprint reduced its electronic mail delivery time from 45 minutes to two minutes after using Firehunter. Madden said Sprint found mis-configured routers and an incorrectly set IOQ while using Firehunter.

Firehunter is targeted to the mid-tier ISP market, described as ISPs with a customer base between 4,000 and 20,000 subscribers. Firehunter can monitor up to 60 service elements. HP defines a "service element" as one service running on a specific host. Basically, a service element is one IP address and port number combination.

HP plans to offer Firehunter LM (for lean machine), a full-feature version of Firehunter, for smaller ISPs; those with a subscriber base of less than 4,000. The Firehunter LM has all of the features of Firehunter, but will only monitor up to 20 service elements. Firehunter LM will sell for \$4,995, and HP expected to ship it on June 1. HP also plans to offer a Firehunter product for ISPs with a subscriber base over 20,000.

For more information on the Firehunter products, visit www.hp.com/go/isp_management, or call 800-452-4844 ext. 5805.

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VENTURE CAPITAL IN THE INTERNET DOUBLED FROM 1996 TO 1997

A Price Waterhouse survey found that venture capital investment in Internet-related companies rose to \$1.88 billion in 1997, a 103 percent increase over the same investment in 1996. The 1997 investment amount is a 1,300 percent increase over the same investment in 1995.

Susan Gore, Internet partner in the Price Waterhouse San Jose office, said investment in Internet related companies recorded the highest rate of growth of any industry segment. "In terms of number of companies, the Internet segment was up 61 percent, compared to 26 percent for all other industries," Gore said. "Clearly, the Internet is one of the key drivers of investment growth overall."

California and Massachusetts ranked first and second, by a wide margin, in investment dollars and number of Internet companies. The rest of the top ten list includes (not necessarily in order) Colorado, New York, Texas, Pennsylvania, Minnesota, Virginia, and Georgia.

The Price Waterhouse Venture Capital Survey (www.pricewaterhouse.com/vc) is a quarterly study of venture capital investments throughout the United States. The survey data was gathered from questionnaires completed by 513 venture capitalists, and tabulated at the Price Waterhouse Survey Research Center in Bethesda, Maryland.

LUCENT INTRODUCES THE PORTMASTER 4

Lucent Technologies (www.lucent.com) introduced its newest multiservice access concentrator, the PortMaster 4. According to Lucent, the PortMaster 4 supports any data service on any port, at any time.

When a switched call comes in on any single phone number or hunt group, on any of its ports, the PortMaster 4 determines the type of call—such as ISDN, or 56 Kbps dial-up modem—and switches service on that port to accommodate the call.

Bill O'Shea, group president for Lucent's data networking systems group, said: "The tremendous growth of data traffic is putting a real strain on network providers to deliver bandwidth whenever, and wherever customers want it, across an expanding mix of services, and at a competitive price."

The PortMaster 4's 10 slot chassis allows up to 864 dial-up modems, ISDN sessions, or 64 Kbps lease line connections; 36 T-1 leased lines; or one T-3 leased line connection. An ISP or network operator can stack as many as five chassis into a seven foot to handle up to 4,320 dial-up connections, or 180 T-1/PRI. The PortMaster 4 has one slot of 622 Mbps, full duplex capacity in reserve, on its switching fabric to support technologies such as xDSL, SONET, and ATM.



The PortMaster 4 features an embedded 5 Gbps ATM cell-switching fabric and a distributed multiprocessor architecture in which PPP processing, filtering, compression, encryption, and packet forwarding are distributed to each card. It also allows a full 155 Mbps to each slot.

To avoid performance degradation, the product features a fully redundant, fault tolerant design, including redundant controller, switch fabric, power, and fans. The PortMaster 4 also allows for hot-swapping of fans, power units, and modules, including the System Manager Module, and each module card contains a hot-standby DSP.

Initially available modules include a channelized T-3 and E-3 module that multiplexes T-1/E-1 streams within T-3/E-3, a quad T-1 98 modem module, and a tri E-3 98 modem module with Lucent's DSP modem architecture and ISDN, Frame Relay, leased line module.

The PortMaster 4 runs on Lucent's ComOS operating system, which supports RIP, OSPF, and BGP4. ComOS also supports SNMP management and Lucent's PMconsole configuration and management utility.

The PortMaster 4's operating system provides both dial-up and dedicated access security features, including PAP, CHAP, Callback, and ChoiceNet, a packet filtering management application. The PortMaster 4 also features Lucent's RADIUS ABM authentication and billing manager software package.

The PortMaster 4 is available for ordering now, and Lucent expects to ship the product in the second quarter of 1998. The list price for a fully configured system, with chassis, power supply, system manager module with 100 Mbps Ethernet, modem modules, management, routing and WAN software, is \$519 per port. The PortMaster 4 is 19" wide by 18" deep and 15.75" tall.

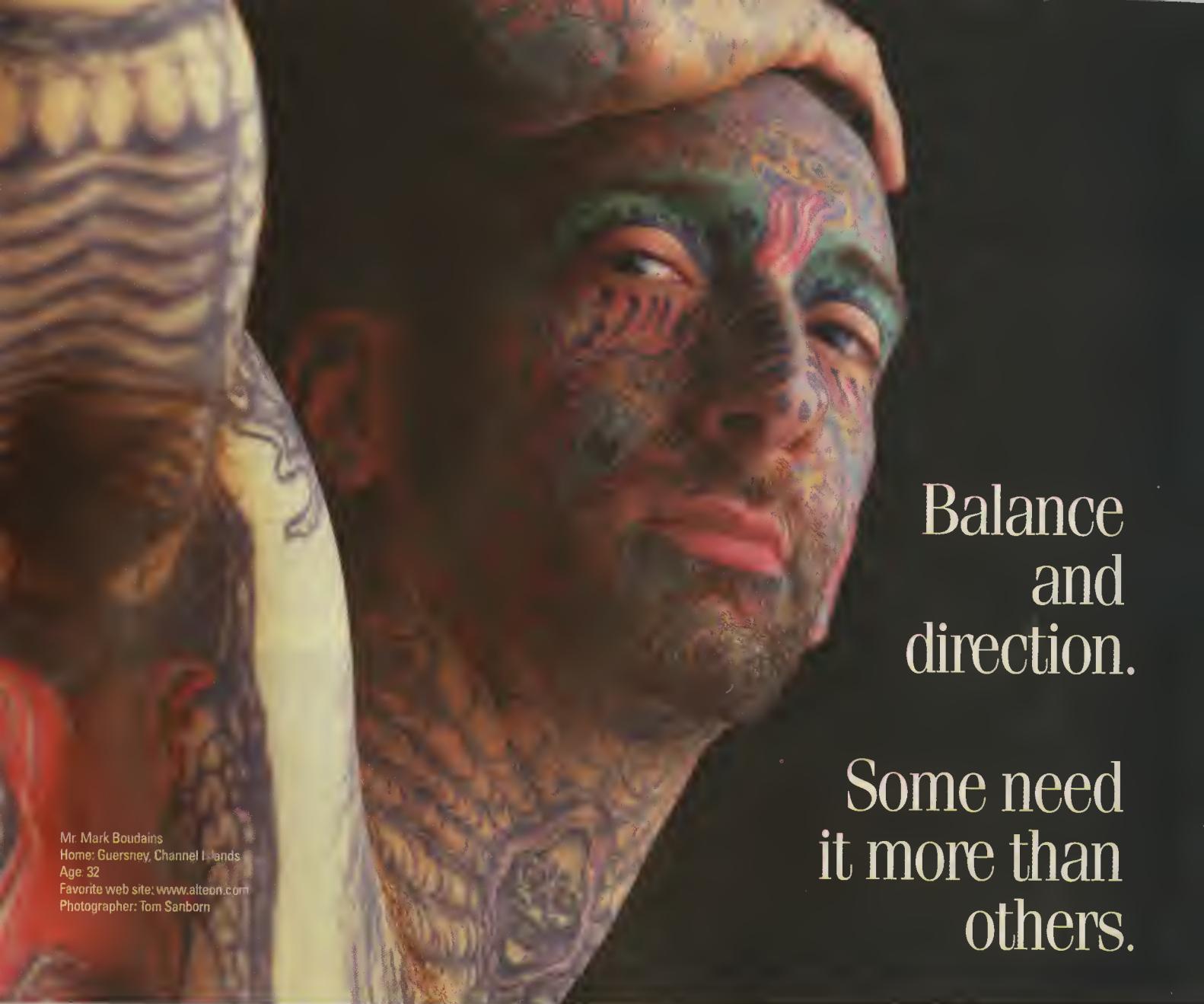
A PDF document with more information is available at www.lucent.com/dns/library/pdf/brochures/portmaster_4.pdf. For customer service help, call (888) 737-5454.

ANTI-SPAMMERS STRIKE ENDS WITH MIXED RESULTS

A two-week moratorium by "despammers" ended on April 17 with mixed results. On April 3, volunteer spam fighters, also known as anti-spammers or despammers, stopped canceling spam on Usenet newsgroups to protest newsgroup administrators' reliance on the despammers, instead of taking measures to filter spam themselves.

The moratorium was announced in a newsgroup posting by Chris Lewis, one of the despammers, on <news.admin.net-abuse.bulletins>. Lewis said the following actions need to take place to fight the increasing bulk of spam: (1) Users need to become more vocal in their complaints to ISPs and sites that host spammed web URLs; (2) ISPs need to become more proactive in ensuring spam doesn't originate on their own systems; and (3) ISPs need to become more proactive in filtering incoming spam, or encouraging the development of spamless feeds.

Lewis encouraged all volunteer despammers to stop their actions for an indefinite period, to show users and administrators what newsgroups would be like without the volunteers' actions.



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According to Lewis, the results of the moratorium were mixed. Predictions of massive spam bombings were not reported, but spam volume jumped dramatically, and the health of alt is seriously in question, said Lewis.

Lewis said some systems without filtering equipment reported increased volume as high as 400 percent. Lewis said his own spam canceling system's detection rate jumped by a factor of 20, and stayed there the entire two weeks.

Lewis said alt.mag.playboy recorded 500 MB in traffic in one day, where as a normal pre-moratorium day would see traffic around 75-100 MB. The newsgroup alt.sexual.abuse.recovery usually saw no more than two spam postings on a pre-moratorium day; but during the moratorium, a typical day would have 100 messages, 95 of which would be spam. "So, there weren't huge numbers of users complaining about spam volumes," said Lewis. "There were many. But, a somewhat disappointing turnout."

Lewis said the volunteer anti-spammers learned a number of things as a result of the moratorium. First, more systems are filtering than previously thought. Second, the despammers believe people do not complain much about spam in the alt groups, because spam is so pervasive. "Most of alt is hopelessly doomed and is overrun by spam," said Lewis. "Alt is dead, it's time to quit flogging the corpse."

Lewis also said the results of the moratorium have convinced many anti-spammers to stop personal attempts to cancel spam, at least temporarily. Lewis said regional newsgroup enforcement should resume immediately, since the regional level of enforcement seems to be the most effective method of fighting spam.

NIKON OFFERS THREE NEW DIGITAL IMAGING PRODUCTS



Nikon's Coolpix™600 is a new ultracompact photo quality digital camera that fits in the palm of your hand.

Nikon's Electronic Imaging Department (www.nikonusa.com/products/products.qry?department=imaging) introduced three new digital imaging products for consumers: the Coolpix 600, a palm-sized digital camera; the Coolpix 900, an advanced, high-resolution digital camera; and the Super Coolscan 2000, a film scanner featuring new technology by Applied Science Fiction.



Nikon's Coolpix™900

Nikon said the Coolpix 600 (www.nikonusa.com/products/products.qry?id=129) is the world's smallest and lightest photo-quality, digital camera. The camera features a high-density 0.8 million pixel CCD and a Nikon lens. It produces 1024 x 768 resolution images.

The Coolpix 600 kit includes batteries and a battery recharger, AC adapter, 8 MB compact flash memory, detachable speedlight, and a docking station for a Macintosh or a PC. Pictures can be stored in a single frame, thumbnail (which allows nine pictures to be viewed at once), or zoom/pan. The Coolpix 600 is expected to sell for \$599.



Nikon's Super Coolscan 2000 high speed 35 mm film scanner features unprecedented color accuracy and automatic removal of surface defects from scans.

The Coolpix 900 (www.nikonusa.com/products/products.qry?id=128) is the first digital camera to feature a 3x zoom, Nikkor lens, one of the finest in the world, Nikon said. Nikon manufactures its own glass and coatings for the Nikkor lens. The Coolpix 900 features a 1.3 million pixel CCD, three-mode metering, a five mode speedlight, and a 945 step autofocus. The camera produces 1280 x 960 resolution pictures.

The Coolpix 900 kit includes a 4 MB compact flash card, and the following software: Nikon View Image 900 software (an extension to Microsoft Windows Explorer), Adobe Photo Deluxe 2.0 (for manipulation), InMedia Slides and Sound (to create multimedia presentations), and Enroute QuickStitch (for panorama stitching).

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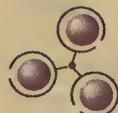
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The Coolpix 900 weighs 12 ounces, and runs on AA alkaline, nickel cadmium, nickel metal hydride, or lithium batteries. The camera's anticipated selling price is \$899.

Nikon incorporated its new ImageFix technology into the Super Coolscan 2000, which automatically removes most fingerprints, dust, water spots, tape, scratches, and other surface imperfections. Nikon said the Super Coolscan 2000 will scan almost any surface-damaged, 35mm slide or negative, and in seconds the image comes up clean, saving retouching time.

The Super Coolscan 2000 (www.nikonusa.com/products/products.qry?idx=127) also features multi-sample scanning, which provides near drum scanner quality, according to Nikon. The image can be sampled up to 16 times during one scan to bring out fine detail in shadow or highlight areas.

Nikon said the Super Coolscan 2000 delivers an average scan time of 20 seconds, with a true optical resolution of 2700 dpi. It can save images in native 12 bit format. The scanner's color management system uses ICC profiles, which allows users to scan in multiple color spaces, including RGB, CMYK, sRGB and LCH.

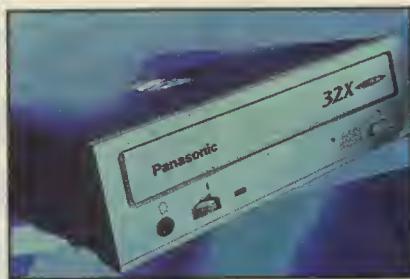
The scanner has a standard 35mm strip film adapter and slide mount adapter, and an optional auto-feeder, which will allow unattended batch scanning of up to 50 slides. The Nikon Scan 2.0 software can batch up to six images, with thumbnails, from the strip adapter, or up to 40 images, with thumbnails, using the advanced photo system adapter. The anticipated selling price is \$1,899.

The new cameras and scanner are expected to ship in mid-May.

PANASONIC OFFERS 32X SPEED CD-ROM

Panasonic Computer Peripheral Company (PCPC), announced it expected to ship its first 32X CD-ROM in March. The CD-ROM drive, model ID LK-MC682BP, has an internal ATAPI 32X drive, and features a maximum transfer rate of 4800 Kbps, and a 65ms access time, PCPC said.

"Constant Angular Velocity Technology has allowed CD-ROM speeds to increase dramatically over the last year, said Doug Feldner, product manager for PCPC Multimedia Systems Division.



"With the addition of auto balance and intelligent spindle speed controls, we're able to achieve 32X performance."

The drive is designed to be installed in any 5.25" bay, and can be mounted horizontally or vertically. It offers both analog and digital audio line-out, and connects via enhanced IDE interface.

The estimated street price is \$99, and PCPC offers a two year limited warranty, 24x7 automated technical support and an exchange program.

RPK OFFERING INVISIMAIL TO ISPs

The makers of InvisiMail Professional, a New Zealand import from RPK Ltd., are offering ISPs an opportunity to offer its public key/private key encryption system for e-mail to their customers as a premium and with bounty enticements for upgrades.

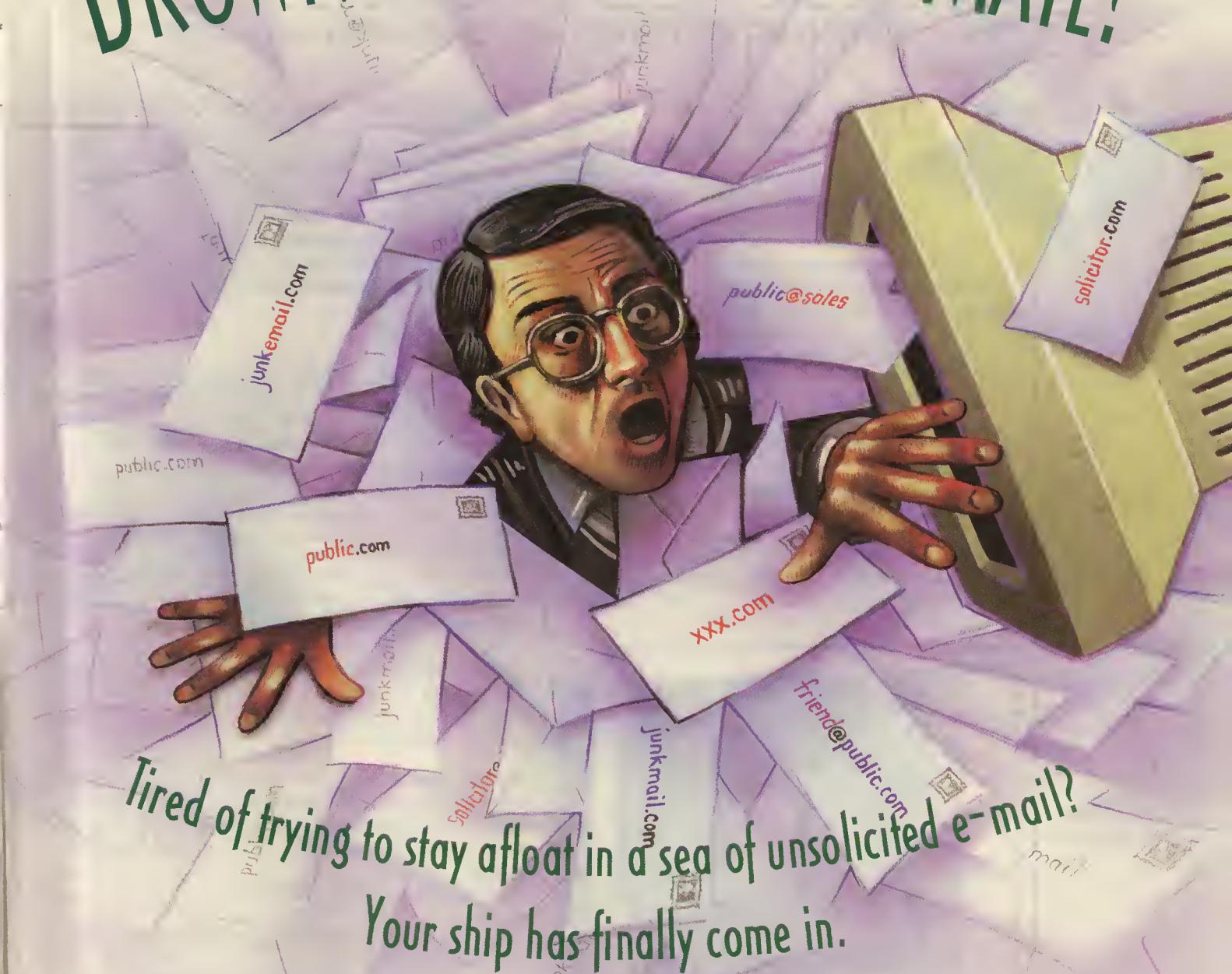
InvisiMail is designed to be transparent and is reportedly so easy to use that it overcomes the main complaint about e-mail encryption: "It's a hassle." The software also supports digital certificates and takes a different approach to encryption from most competitors, using what RPK calls a "nonlinear mixture generator."

ISPs can offer the free Intro Version of InvisiMail to their customers as a premium. They can include it on their starter disk or provide a link to a download site. RPK is offering a bounty of 30 percent of the upgrade fee to the Professional Version (\$29.95) for any of an ISP's customers who purchase an upgrade.

Because RPK is a New Zealand company, InvisiMail is not subject to export controls for American users as many other encryption systems are.

ISPs interested can contact Lyn Oswald, marketing director, RPK New Zealand Ltd, Fast Public Key Cryptography, U.S. Sales and Marketing Office, 1755 Filbert Street, Suite 1U, San Francisco, CA 94123; e-mail: lynoswald@InvisiMail.com; web: www.InvisiMail.com; voice: (212) 488-9891; fax (212) 321-2878.

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TECHNOLOGY FRONT

by Jim Thompson
Western News Service

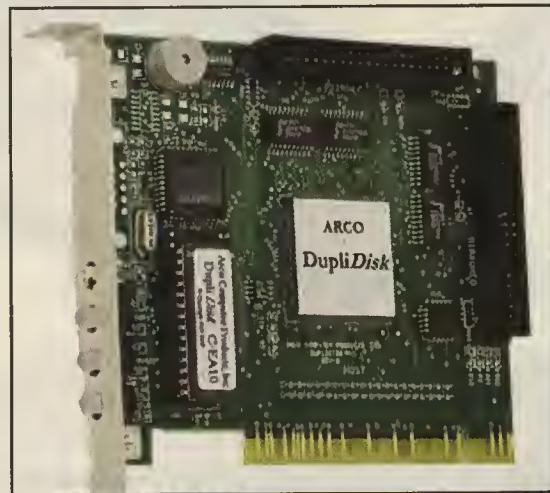
MIRRORING IDE DRIVES - THE DUPLIDISK SOLUTION

There is only one way to protect your precious computer data — make frequent backups. As an ISP, you know how important it is to make backup copies of your data. As a human being you also know what a pain this can be.

A new product from ARCO Computer Products (www.arcoide.com) has just made this tedious and often neglected task easy for everyone, by providing RAID-1 mirroring technology for IDE drives. Their DupliDisk and AC Mirror controllers mirror data to two drives simultaneously. If one drive fails, the other immediately takes over.

MIRRORING WITHOUT SCSI

Traditionally, mirroring data to two drives was restricted to systems fitted with SCSI drives and a SCSI controller. Since such drives are normally more expensive than IDE drives, RAID (Redundant Arrays of Inexpensive Disks) technology was not used or even considered by many users.



The cost of IDE drives is dropping daily. They are so inexpensive these days, it is almost silly not to consider a mirroring system for your critical data.

ARCO's DupliDisk is a small card that fits in a PCI slot of your computer. Installation could not be easier. DupliDisk is an intermediate adapter that connects between the IDE controller and the hard drives.

A connector cable is installed from the DupliDisk to the IDE connector on the motherboard and another connector cable goes to the primary and secondary hard drives. Although the DupliDisk card occupies a PCI slot, it uses this slot for power and setup purposes only. It does not require an interrupt, an I/O address or any other system resources. It simply runs off your existing IDE controller. Consequently, it does not require any changes to your CMOS setup.

SIMPLE SETUP

After installing DupliDisk, a DOS based setup program must be run. If you run Unix or Linux, you can boot from a DOS diskette and then run the program. This is only a setup program. DupliDisk does not require or use software drivers or TSR programs.

Once the setup program is run, you are set to go and ready to begin mirroring your primary drive. It took only about 20 minutes to copy a 3 GB drive to the secondary drive. It was remarkably easy. There was no need to run FDISK or FORMAT. All I did was select the copy option from the setup program.

After this copying procedure, I re-booted the system. There were no problems, glitches or hiccups. The DupliDisk worked perfectly, mirroring everything from the primary to the secondary drive.

If a hardware failure were to disable one of the mirrored drives, operation would automatically shift to the functioning drive. An alarm sounds to alert you to a malfunction, but there is no interruption in service.

Your system just keeps cranking.

The failed drive can be removed and/or replaced when you have the time.

NO OPERATING SYSTEM RESTRICTIONS

Compatibility with the DupliDisk-PCI is established at the original IDE connection, making it possible to use the card with virtually all operating systems. It can be installed in systems running Windows 95, Windows NT, Windows 3.x, OS/2, DOS, Unix, Linux and NetWare, as well as others. DupliDisk supports ATA, E-IDE and UDMA drives of all sizes.

I tested it with several operating systems, including Windows 95, DOS, Windows NT and UNIX, and various file structures (FAT16, FAT32 and NTFS) without

"I am flabbergasted at how awesome Comtrol's InterChangeVS™ 1000 product works."

—Roger Gallego



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"I now have a fantastic solution for our customers who are struggling with cable and proximity issues. I've been in business for 10 years and don't get excited about many products. Sorry to sound like a used car salesman, but I give credit where credit is due."



— Roger Gallego
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problems. It also worked without problems or complaints with IDE, EIDE and DMA-33 drives.

There is no need for the drives to be identical. Up to four drives can be installed in the system (two primary and two for mirroring). These can be from any manufacturer and of any size. If the drives are of unequal capacity, the DupliDisk will use the parameters of the smaller drive.

Best of all, there is no degradation of speed when using DupliDisk. The existing IDE controller on the motherboard controls the data transfer speed. The DupliDisk does not affect drive throughput and will not slow down the system.

CRASH TESTS

The DupliDisk worked so well that after a while it was boring. I decided to see what would happen if disaster were to strike.

To simulate a disk failure, I installed a drive that I knew had bad sectors and then began accessing these sectors. The DupliDisk beeped and one of the LEDs on the card turned from green to red. I did a soft reboot and the system automatically switched to the working drive without problems or hesitation.

To replace the bad drive, I rebooted into DOS, ran the diagnostic utility that is supplied with DupliDisk (this confirmed that the drive was bad). I replaced the failed drive and copied the data from the other drive to the new one. In less than 30 minutes, I was back in operation with both primary and mirrored drives fully functional.

In addition to the DupliDisk-PCI, ARCO offers a disk-mirroring controller that fits into an ISA slot (DupliDisk-ISA), and one that incorporates an IDE adapter (AC-Mirror). According to ARCO, a slotless version, designed to be installed in a drive bay, is currently under development.

CONCLUSION

I tried everything I could think of to make the DupliDisk fail. Besides putting in a flawed disk, I also tried cutting the power to the primary drive. DupliDisk detected the problem, sounded the alarm and switched to the backup drive.

It was a thing of beauty to watch.

This is truly a fine product. It is simple to install, works flawlessly, and, since two sets of drives can be used, it is extremely cost effective. At a cost of only \$225, it should be a must for anyone using IDE drives for important information. If you are an ISP using IDE drives on your servers, you owe it to yourself to check out this first-rate product. ♦

CONTACT

DupliDisk

ARCO Computer Products, Inc.,
2750 North 29th Avenue
Hollywood, FL 33020.
Tel: (954) 925-2688.
Fax: (954) 925-2889.
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ISP MATING RITUALS

by Bill McCarthy

HONEST RELATIONSHIPS BASED ON CACHE

Alteon Networks is drawing partners alike a playboy with a new Corvette. It must be the cache. The latest company to sign a partnership with the company that offers server load balancing, web cache redirection on a single scaleable switching platform, is Mirror Image Internet. Mirror Image provides caching software, hardware and cache management services, and agreed April 20 to cooperate with Alteon in delivering caching to Internet service providers.

The combination of Mirror Image's transparent local network cache, the Web Gateway Interceptor, and Alteon Networks' ACEdirector are available immediately. Under the agreement, the companies will refer each other's products to ISPs and collaborate on new features.

Alteon is also making lots of other folks swoon lately. Based in San Jose, California, Alteon Networks is a technology developer focused on server-efficient networks by applying Gigabit Ethernet to enhance server communications. Its switching products include Gigabit Ethernet and Fast Ethernet switches, intelligent network interface cards and host-optimized drivers designed to offload system CPUs. Alteon Networks announced several partnerships at ISPCON in Baltimore that included Inktomi Corporation, Network Appliance, Inc., and CacheFlow Inc.

The Mirror Image/Alteon Networks combination uses switching intelligence within the ACEdirector for web cache redirection. HTTP traffic destined for remote Internet hosts is identified by the ACEdirector and automatically redirected to locally-attached Web Gateway Interceptor caches. This is to enable processing-intensive routing functions to be offloaded from Mirror Image caches. The companies completed interoperability testing and field trials and are cooperating on the development of new features that enhance the way caches are integrated into large networks.

Mirror Image's caching employs central caches placed at major exchange points such as the MAEs in the U.S. and others overseas as well as a server at the local ISP and a cache management service.

Woburn, Massachusetts-based Alteon's partnership with Inktomi combines its ACEdirector and Inktomi's Traffic Server network cache. Network Appliance, Inc., a provider of dedicated data-access appliances and storage servers, extended its long-term development and sales partnership with Alteon Networks. Every Network Appliance filer enabled for Gigabit Ethernet performance has included optimized Alteon

adapters. NetApp and Alteon first announced their partnership in 1996. CacheFlow Inc and Alteon Networks partnership married CacheFlow 1000 with Alteon's ACEdirector Internet Traffic Director, promising to increase the speed of web page delivery and increase the efficiency of existing bandwidth "by a factor of four."

Mirror Image Internet Inc. has a bit of roving eye as well. It hooked up with national Internet carrier SAVVIS Communications Corporation while at ISPCON.

Cache is attracting cash.

THE THRILL IS GONE FOR NETCHANNEL IN UK

San Francisco, California's NetChannel sold its Great Britain operation to United Kingdom wholesale Internet service provider, NTL Internet.

NetChannel markets a device that delivers Internet access through a telephone line and a television set. They are marketed in the U.S. as the RCA Network Computer. Reports circulated that NetChannel considered filing for bankruptcy protection, but avoided such drastic moves after investors made new financial commitments.

The deal was worth about \$1 million to NetChannel, according to an NTL press release. NetChannel UK Limited, the UK's television-based Internet access and content provider, will become a division of NTL Internet.

Headquartered in Farnborough, NTL Internet has data centers in Guilford and South Wales, and a large call center in Newport providing around-the-clock customer service and technical support. These facilities currently support about 75,000 Internet subscribers. NTL Internet is a subsidiary of NTL Inc. that formed through the merger of International CableTel Inc. and NTL Limited, the NTL group of companies is one of UK's largest data, broadcast and network companies.

GST CONTINUES TO COLLECT CLECs

Like a giant amoeba, GST Telecommunications, Inc. is ever expanding its presence in the West, swallowing CLECs whole and connecting them with tentacles of long-haul fiber. GST announced April 16 that it bought Seattle-based ICON Communications Corp., a full-service telecommunications provider for \$23.8 million in cash (not cache).

Bill McCarthy, a recovering newspaper reporter, is an editor with *Boardwatch Magazine*. He is surrounded by piles of press releases on a variety of Internet-related subjects. This column is one way to diminish one of those piles as well as an attempt to keep track of the mergers, acquisitions and some of the partnerships occurring among Internet service providers and their vendors. He can be reached at bill.mccarthy@boardwatch.com.

ICON provides local dial tone, long distance and other telecommunications services to small- and medium-sized businesses primarily in Seattle and Portland. For the 12 months ended December 31, ICON reported revenues of about \$19.2 million and positive earnings before interest, taxes, depreciation, and amortization (EBITA) of about \$1.5 million. Headquartered in Seattle, Washington, ICON was formed in 1988 by President and CEO Les Cole, who will remain with GST.

In addition to Whole Earth Networks in San Francisco and Call America Phoenix, ICON is GST's third acquisition in two months. The combined 1997 revenue run-rates of the three acquired companies was about \$30 million, and the current monthly revenue is about \$2.9 million. GST recently sold its interest in NACT Telecommunications, Inc. for \$86.5 million, providing the cash to buy more CLECs.

PSINET ALSO SWEET ON CLECS

Lusting after primary rate interface circuits, PSINet Inc. announced April 15 that it has completed agreements in the United States with three CLECs: ICG Communications Inc., e.spire Communications, Inc., formerly ACSI (American Communications Services, Inc.), and Eagle Communications, Inc.

The agreements give PSINet collocation rights and access to a range of CLEC capabilities - particularly primary rate interface (PRI) circuits. PSINet typically employs PRIs for a range of Internet connections below T-1 speeds. High-throughput network bandwidth facilities in the United States have historically been a regulated utility under the control of regional Bell operating companies (RBOCs). Availability became limited and pricing remained high due to the exclusive ownership of facilities.

However, industry deregulation, healthy growth of the commercial Internet, and new technologies are creating alternatives to traditional RBOC services, particularly in metropolitan areas, according to PSINet. PSINet selected ICG Communications Inc. of Englewood, Colorado; e.spire Communications, Inc. of Annapolis Junction, Maryland; and Eagle Communications, Inc. of New York, New York, to provide thousands of PRI circuits supporting nearly 100,000 modems. PSINet recently bought 50,000 modems from Ascend Communications that are being deployed with the PRI circuits.

PSINet is looking for additional CLEC providers in all major markets. PSINet CLEC agreements cover regions in 14 states and Washington, D.C. The areas served are to be linked along PSINet's OC-48 fiber provided by IXC Communications.

MICROSOFT'S PRIVACY INTEREST SHOWING

Microsoft Corp., the company that in 1995 allegedly tried to read the details of your hard drive through online registration, announced April 9 it would buy Firefly Network Inc., a provider of technology that makes possible the secure exchange of private information on the Internet.

Microsoft haters immediately spotted a conspiracy. But this kinder, gentler Microsoft anticipates that the acquisition will benefit consumers by enhancing its ability to deliver privacy-rich Internet products and services.

The acquisition will accelerate Microsoft's ability to implement products and services that meet the Platform for Privacy Preferences (P3P) protocols being agreed to by the

World Wide Web Consortium (W3C). Through its support of the P3P standards, Microsoft hopes to increase consumer acceptance of the Internet.

Junkbusters President Jason Catlett said, however, "If Microsoft keeps buying Internet companies and fuses their customer databases together, Gates will be called Big Brother Bill." Microsoft should declare a policy of openness about the data it keeps and what it buys from marketers, he said. Junkbusters' site (www.junkbusters.com) is a consumer resource on the control of telemarketing calls, unwanted mail, e-mail, and commercial invasions of privacy.

Catlett praised Firefly for showing that millions find mass customization of sites worthwhile, and that it can be accomplished while retaining anonymity. "But the millions who have given their names, e-mail addresses and other personal details to Firefly may be disturbed to find Microsoft owning it," he said.

Firefly was one of the first companies to develop privacy practices and technology that give individuals control over what personal information is provided to a web site. Firefly's Passport collects user preferences anonymously, recommends content, and sends selected advertising, while ensuring privacy. The company also employed an outside auditor to assure that privacy protection policies work. Firefly has played a significant role in driving industry privacy standards, including the P3P and the Information and Content Exchange (ICE) protocol to enable the "trusted exchange" of information on the Internet.

The companies are keeping details of the agreement secret. (Protecting their privacy?) *The Wall Street Journal*, however, reported that the deal is worth about \$40 million in stock, cash, and assumed debt. Firefly executives said details are still being negotiated and the price reports were wrong. Firefly, a privately held company in Cambridge, Massachusetts, will relocate to Redmond, Washington.

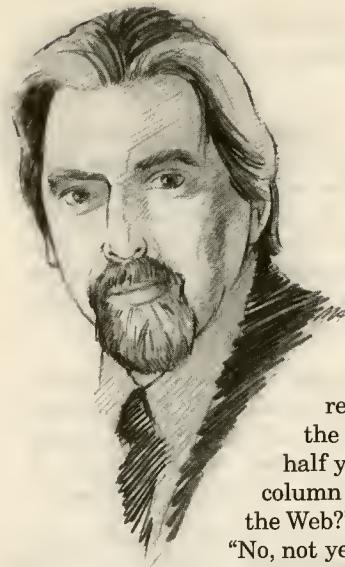
CHECK POINT, METAINFO COMINGLE SOFTWARE

Check Point Software Technologies, a security and network management vendor, will merge with Seattle's MetaInfo, a vendor of Internet-address management software. Check Point plans to integrate MetaInfo's software with its FireWall-1 security product and FloodGate-1 bandwidth management product.

MetaInfo will become a subsidiary of Check Point of Redwood City, California, and Ramat-Gan, Israel, the companies said April 14. MetaInfo's IP address management products, which integrate dynamic assignment of IP addresses, mapping of IP addresses, and directory services, will be added to Check Point's Enterprise Infrastructure management product line. MetaInfo's technology will also be incorporated into the products in Check Point's Enterprise Security Management and Enterprise Traffic Management products.

In essence, the MetaInfo products manage the physical infrastructure upon which network services, such as Check Point's security, traffic control, and directory products are built. The integration of technologies enables network administrators to create a universal access profile, so the user's security privileges and traffic priorities are available from any access point.

Check Point (Nasdaq: CHKPF) will issue 683,200 shares of common stock in exchange for all of the outstanding shares and options to purchase shares of MetaInfo. The merger will be accounted for as a pooling of interests. ♦



@INTERNET

by Thom Stark

VRML: STILL NOT READY FOR PRIME TIME

There was a time when I was enthusiastic about the potential of 3-D to revolutionize both the user interface to and the content of the Internet. Some two-and-a-half years ago (in another magazine), I wrote a column entitled: "Is Virtual Reality the Future of the Web?" Sadly, it's pretty clear that the answer is: "No, not yet-and perhaps not ever."

In part, that's because Virtual Reality Modeling Language (VRML) browsers are still ridiculously difficult to actually use. In part, it's a performance issue and in part it's because effective bandwidth on the Internet is still so constrained.

Mostly, though, it's because VRML is still a solution in search of a problem.

I'D LOVE TO CHANGE THE WORLD

In a very real sense, VRML grew out of a discussion on virtual reality interfaces to the Web, which was held during a Birds of a Feather session at the first World Wide Web Conference in Geneva, Switzerland in the spring of 1994. That discussion was sparked by "Cyberspace," (www.cern.ch/PapersWWW94/mpe_sce.ps) a Web Conference presentation co-authored by Mark Pesce, Anthony Parisi and Peter Kennard-all then of the Labyrinth Group-and actually presented by Pesce.

In it, the authors put forth a proposal to implement the vision of novelists like William Gibson (author of *Neuromancer* and other science fiction works and coiner of the term "cyberspace") and Neal Stephenson (author of *Snow Crash* and *The Diamond Age*) for a three-dimensional data space to be superimposed on the Internet's IP address space and shared as what Pesce, et al, called a "collective hallucination."

Visionary as it was, that proposal bore no relationship to what virtual reality on the Internet evolved into over the next few years. Pesce and his fellow dreamers had envisioned a universal addressing scheme-a reinvention of the familiar URL-where every object in cyberspace would be represented by a 32-bit number that specified its "location" (independent of its IP address). What they got, instead, was an extended discussion with like-minded Internauts that eventually turned into the VRML language.

In May of 1995, Gavin Bell of Silicon Graphics, Parisi and Pesce co-authored the VRML 1.0 specification. The initial spec (www.vrml.org/Specifications

/VRML1.0/), which had been gestating in draft form since November of the previous year, was based on a subset of SGI's proprietary Open Inventor file format (www.sgi.com/Technology/Inventor/VRML/VRMLDesign.html) and incorporated many of its conventions directly into the .WRL file format.

The Inventor format consisted of ASCII text-an important lowest common denominator consideration-and already included most of what the nascent VRML community agreed a usable spec had to support: an object basis, a method for describing the properties of a collection of objects (both Inventor and VRML call this a "scene graph"), a hierarchy of object types (known as "nodes" in both languages), the idea of points of view (Inventor and VRML 1.0 called them "cameras") and different kinds of lighting (directional, pointsource and spotlighting) to display shadows and highlights. It also included a lot of other functions-far too many for a successful VRML language-which would have to be fairly compact in order to succeed in the low-bandwidth user environment of the rapidly-expanding Internet.

The shortcomings of the original spec became obvious within months of its adoption. In January 1996, an interim set of "clarifications" was issued to address the points of greatest confusion and/or unwieldiness. The major problem was that the spec was simply missing too much functionality-it was, in a word, still primitive.

WE CAN WORK IT OUT

Various proposals to flesh out the 1.0 spec with a 1.1 interim release had come to nothing, and on January 4, 1996, a Request for Proposals for VRML 2.0 was issued by the VRML Architecture Group (VAG), the eminences grise of the VRML community. It didn't allow much of a window for development, since the deadline for response was February 2 - less than a month later.

The six respondents and their proposals were:

1. Active VRML - Microsoft
2. Dynamic Worlds - German National Research Center for IT
3. HoloWeb - Sun
4. Moving Worlds - Silicon Graphics
5. Out of this World - Apple
6. Reactive Virtual Environment - IBM Japan

From February 23 to March 18, 1996, the VAG conducted an online poll of the VRML community's reaction to the six proposals. One hundred and ninety one

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people responded with votes on one or more of the candidates. In the end, the SGI Moving Worlds' submission was the favorite by a significant margin—not a terribly surprising outcome, in view of the genesis of VRML 1.0.

With help from both Sony Corporation and from Mitra (a major presence in the VRML community who, like Cher, Madonna or Sting, chooses to affect a single name), the original Moving Worlds spec continued to evolve through three drafts. The third and final one was largely the work of Gavin Bell and Chris Marrin of SGI and of Rikk Carey. The final VRML 2.0 specification was released on August 4, 1996, at Siggraph 96 in New Orleans.

Version 2.0 added enhancements such as backdrops, fog, irregular terrain and sound to static VRML worlds. It also simplified the scene graph structure from the chunky and convoluted mechanism described in VRML 1.0.

Another step forward in VRML 2.0 was interactivity. To the 1.0 spec's 36 nodes (including nodes that describe shape, properties group characteristics, viewpoints, lighting and hyperlinks), 2.0 added terrain following (allowing viewers to "climb" steps or ramps, for instance), collision detection (eliminating the annoying tendency to walk through walls) and seven kinds of sensors. Sensors either trigger events as a consequence of user actions or track the passage of time, allowing clock-driven events.

Version 2.0 also added animation (via a set of objects known as "interpolators") and scripting (yet another new type of node), which is how input from sensors triggers events (such as animation) to the bag of tricks available to VRML authors. In a bow to the general consensus that VRML needed to be easily extensible without requiring the language itself to be further revised, provision was made to allow authors to create what are called "prototypes."

Prototypes are encapsulated groups of nodes that are treated as a unit. They may have defined variable fields (such as color, length, etc.) that allow a single prototype to be reused in multiple iterations, distinguished only by different values in their shared variable fields. In other words, by declaring an airplane prototype, a VRML 2.0 author can incorporate a fleet of airplanes of different colors into a world simply by defining multiple airplane nodes. Since all of the airplanes in the fleet are defined by the prototype, only the fact that each is an airplane node and the variable field value that determines its color need to be defined for each individual airplane iteration.

R-E-S-P-E-C-T

All this new functionality was badly needed and enthusiastically welcomed. However, one of the major problems with VRML was its status as a moving target. That issue was addressed on April 4, 1997, when a revised version of the VRML 2.0 spec was submitted to the International Standards Organization (ISO) as VRML 97 Draft International Standard (DIS) 14772. The VRML 97 DIS document included a few (mostly minor) technical revisions and a substantial number of editorial changes, which make it considerably clearer and more readable.

Since ISO rules forbid any changes to a DIS under consideration for adoption by its members as an International Standard, any further tinkering with the core standard came

to a screeching halt. ISO and the International Electrotechnical Commission (IEC) solicited comments on the DIS for more than seven months before publishing it in December 1997. On January 26, 1998, in a joint press release, the VRML Consortium (www.vrml.org), the ISO and the IEC announced the acceptance of ISO/IEC 14772 (www.vrml.org/SPECIFICATIONS/VRML97) to the world.

That gave VRML 97 the formal blessing of the international standards community, and it helped provide the leverage for the VRML Consortium—which was founded in December 1996—to persuade Sun Microsystems it was time to come on board as a voting member. Sun did so on February 18, 1998, during the VRML 98 Symposium. That was important, because the Consortium desperately needed to reach an accommodation between VRML and Sun's emerging Java 3D API. At the Symposium, Sun and the Consortium announced, in a joint press release (www.vrml.org/consort/sun98.html), that the follow-on utility library for the forthcoming Java 3D API V1.0 Sample Implementation would include a VRML 97 browser tool and geometry loader.

A TOWN WITHOUT PITY

Unfortunately, all the standardization in the world hasn't solved the technical problems of slow, hard-to-use VRML browsers. The addition of textures, sound and animation to the VRML palette has resulted in a general increase, rather than a decrease, in the bandwidth it takes to browse even moderately complex VRML worlds. And the fundamental problem is still that of application.

Or, as an SGI technology evangelist privately expressed it to me, "Name one real problem that VRML solves."

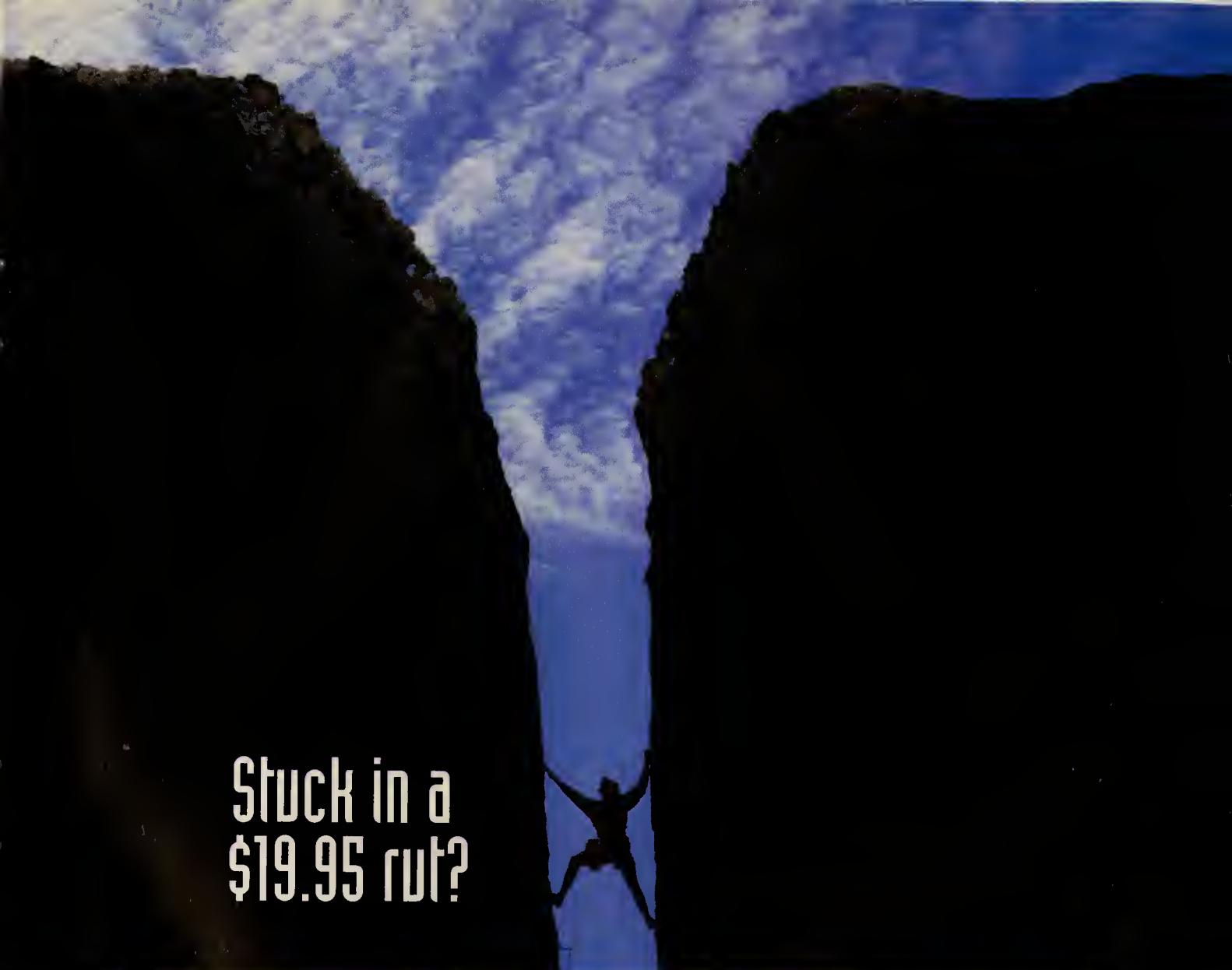
It's not that there aren't any.

Instead, it's that there aren't nearly enough such problems to make VRML more than a curiosity for the foreseeable future.

In fact, a lot of the pioneer VRML sites are out of business. Virtual SOMA, a VRML 1.0 recreation of San Francisco's Multimedia Gulch is gone. The VRML from Hell page is Not Found. Macmillan Publishing's VRML Foundry is missing, and The Community Company's web site hasn't been updated since May 1996. In fact, there are an awful lot of broken links in the various collections of VRML site URLs around the Web. For instance, all of the links I cited in my September 1995 column on the subject return 404 errors now.

To be fair, there are still plenty of new and regularly updated VRML sites around, and there are a lot of cool tools available, too. If you're interested, start at the San Diego Supercomputer Center's VRML Repository (www.sdsc.edu/vrml). It includes links to browsers, authoring applications and software development resources, documentation and object, sound and texture libraries, as well as links to other VRML-oriented sites.

One such site is WebEarth (tcc.iz.net/we), which maps a set of satellite weather maps onto a VRML globe to display a world-wide weather map that's updated every 60 minutes. (This, by the way, is a pretty good answer to that "Name one real problem that VRML solves" challenge.) You'll need a VRML 2.0 browser or browser plug-in to view it.



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If that gets you excited, you'll probably also want to subscribe to comp.lang.vrml and its less formal twin, alt.lang.vrml, get on a VRML mailing list (www.sdsc.edu/vrml/mailing.h_tml) or two, and perhaps even consider joining one of the 19 VRML Working Groups (www.vrml.org/WorkingGroups).

Meanwhile, you might devote some time and energy to considering the question

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of just what it would take to make VRML, in particular, and 3-D, in general, so compelling that everyone and their little sister flock to it like swallows flock to San Juan Capistrano in the spring. I haven't been able to come up with anything, and I've been thinking about it on and off ever since SGI rolled out their WebSpace viewer in 1995.

THE SONG REMAINS THE SAME

One thing seems safe to say: William Gibson's original vision of cyberspace won't be coming to an Internet near you any time in the near future. There are many reasons why that's so, but the one that's easiest to grasp is that what works extremely well as a novelistic device for writers such as Gibson and Stephenson, doesn't necessarily work the same way in the real world—or in the virtual one, for that matter. That's a big reason why cybermalls, as a marketing model, have completely failed to take off and that's also a major reason why VRML hasn't worked very well as a user interface.

In order to go shopping in the real world, for instance, we're forced to travel from one physical locale to another. That's why real-world malls are so successful, because they collect a bunch of other-

wise-unrelated stores in a single physical location. A given mall may not include every one of the exact stores we'd prefer, but, if it offers enough of them, we'll gladly accept substitutes for our other selections in exchange for the convenience.

On the Internet, by contrast, we have no need of such a concentration of otherwise-unrelated entities at a single address. That's because distance, per se, is basically meaningless on the Net, and because search engines and other directories are a much more useful and flexible means of accessing disparate businesses than is massing them in a single virtual "location." Virtual malls are, thus, a solution in search of a problem.

The same thing is true of VRML. Since every "location" on the Web is, for all practical purposes, right next door to every other location on the Web, the need for a virtual Main Street simply doesn't exist. That metaphor, which works so beautifully in *Neuromancer* and *Snow Crash*, just doesn't apply to the Web or the rest of the Internet.

That's the main reason why VRML still isn't ready for prime time.

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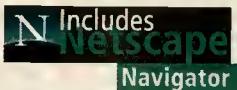


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PUTTING THE NET TO WORK

by Durant Imboden

A COLUMNIST'S SMORGASBORD

The smorgasbord, kolde bord, or Scandinavian buffet has always been one of my favorite culinary experiences. This month, I'll be serving up the columnist's equivalent of a Danish cold table - not to compete with John Dvorak's monthly recipes,

but because NetObjects 3.0 didn't arrive in time for a review and I have to write something to keep Jack Rickard from keelhauling me with his Hummer.

Our first stop at buffet table will be:

ARE E-MAIL LINKS OBSOLETE?

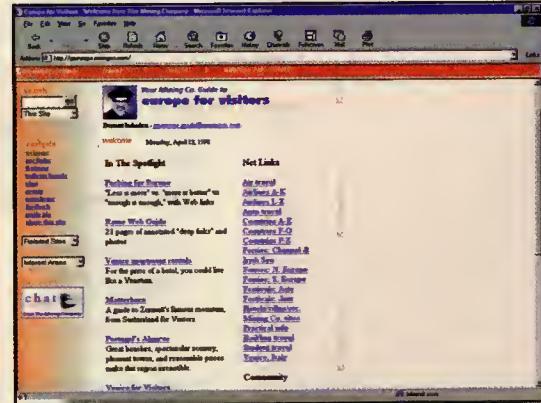
In the early days of the World Wide Web, nearly every page had an e-mail link to the webmaster. The idea, presumably, was that users could contact the Webmaster to report technical glitches or dead links, ask for reciprocal links, or merely say, "Your site is cool!"

E-mail links made sense when the Web was like ham radio, and the average webmaster was excited to have his signal heard by a Web user on the other side of the world. ("Hey, Charlie, look at this - I just got an e-mail from a guy in Japan!")

Do they still make sense today? I'm beginning to wonder if they aren't becoming counterproductive, especially on sites with high traffic levels. Why? Because so many of today's Web users regard e-mail as a substitute for exploring a web site or as an invitation to solicit free services that the webmaster may not have the time or desire to provide.

Let's look at several examples:

On my Europe for Visitors site at The Mining Company, <http://goeurope.miningco.com>, I receive a constant stream of e-mails that fall into two categories.



The first category might be headed, "I'm too lazy to explore your site, so I'll ask you a question instead." A typical message might read:

"I'm going to Europe in July. Could you tell me what ferries run between England and France?"

Now, even a cursory glance at my site's main page will reveal a link titled "Ferries: UK/Eire." Clicking on that link will show annotated links to ferry sites with timetables, price lists, and reservation forms. So why e-mail me with a request for information? Is it laziness, a craving for human contact, or a mistaken belief that I'm hiding all the good stuff? Beats me.

The second category of e-mail could be described as, "The public library won't do my research for me, so I'm using you as a substitute." The user might ask:

"My financee and I are planning a bicycle tour of Western Europe. Could you suggest an itinerary that includes Paris, Geneva, Munich, Salzburg, and Rome, with travel times (by bicycle) between each city?"

Aside from the question of whether I'm an expert on European cycling (I'm not), why would a user presume that I'd be willing to spend hours assembling a custom itinerary for a perfect stranger? And by responding politely and steering the user toward a suitable URL, am I providing good customer service? Or am I reinforcing bad behavior?

Finally, how am I going to cope with the deluge of e-mail if traffic on my site continues to grow at its current pace? Just sending out boilerplate responses could take an hour or more each day.

How do other webmasters deal with this problem? How many have resorted to burying mailto: links in dusty corners of their web sites or removing them altogether? If you'd like to comment (without asking for a detailed European bicycling itinerary), <mailto:imboden@writing.org>.

THE ECONOMICS OF ONLINE COMMUNITY

"Community" is a buzzword on the Net these days. Netscape is beefing up NetCenter, Microsoft is readying its Start "portal site" for launch in late 1998, Snap! Online is trying to carve off a slice of the newbie audience, Yahoo! hopes to be the Web's answer to AOL, and the major search engines are adding community features in a quest for user loyalty.

Don't get me wrong - I'm all for community. (After all, I run a forum on MSN, and my Mining Company site

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includes a chat room and bulletin board.) But I do sometimes wonder what's behind the lemminglike drive for community, and whether it makes economic sense for every Web index, search engine, and megasite.

Let's examine two assumptions about community:

Assumption 1:

Advertising will pay for chats and bulletin boards.

Will it? The numbers that I've seen aren't very encouraging. AOL's chat rooms, for example, have a nominal CPM (cost per thousand impressions) of \$5 to \$15.

In contrast, AOL NetFind's rate card at <http://media.aol.com/aolnetfind.html> lists a minimum CPM of \$20 for "general rotation" banner ads, or \$75 for ads directed at users who search on specific keywords or in categories like travel, personal finance, real estate, automotive, computers, and sports.

This means that, according to AOL's own rate card, a NetFind ad is worth anywhere from 33-1/3 to 1,500 percent more than a chat ad.

One can argue that online communities are valuable to advertisers if they fit certain demographic and psychographic models. Is this theory valid? I'm not sure. Most advertisers like to feel comfortable with the editorial environment where their ads are running. A professionally edited magazine or web site's "content" pages aren't likely to contain flames, random obscenities, sexual solicitations, idle social chitchat, or off-topic material. A chat room or bulletin board is likely to contain some or all of these things.

Does Coca-Cola want its banner to display just as a 16-year-old boy is challenging a mother of three to take off her clothes? Will Dean Witter's ad about trust and integrity be successful on a bulletin-board page where an unhappy ex-customer can type "My Dean Witter broker helped me lose ten thousand bucks?"

I don't pretend to know the answers - but I do wonder how many advocates of community have confronted such questions.

Assumption 2:

Community will drive traffic to "content" pages.

This claim smacks of wishful thinking. Common logic suggests the opposite is true - that is, a professionally designed and adequately promoted web page will lead users to try a site's community offerings.

Still, if the goal is to keep readers coming back to a search engine or "portal" site, community may be useful - especially if banner ads on the chats and bulletin boards are promoting the site's own features, goods, and services. But aggressive promotion is essential, and it isn't realistic to expect users to surf a web site just because they've shown up for chats or message boards. (After all, who has time to explore web pages after sitting in a chat room for a couple of hours?)

Bottom line: Community may be a wise investment for a Web megasite that has something to sell and needs repeat visitors. But is it likely to be a source of profits in its own right? Only time - and a lot of patience - will tell.

WRIST PAIN: A MIRACLE CURE

No, this isn't spam from an [alt.carpal.tunnel](#) newsgroup. It's the final course in this month's journalistic smorgasbord. And while the topic doesn't really fit under "Putting the Net to Work," it's important to many of us who use the Net - and our computers - to earn a living.

Five or six years ago, I developed severe pain in both wrists after more than 30 years of touch-typing. My fingers were numb, I had shooting pains in my forearms, and I couldn't type for more than a couple of hours at a time. (NOTE: This was before the great Carpal Tunnel Syndrome Scare, and terms like "repetitive stress injury" and "CTS" weren't even in my vocabulary.)

I did some research and decided to try conservative measures before entrusting my wrists to a surgeon. I bought a wrist rest for my keyboard (hard to find in the early '90s), wore wrist splints at night, took aspirin, and gave up the piano. When the pain continued, I bought a chair with armrests. That helped a little, but I still couldn't type for more than a few hours at a stretch.



Next, I retrained myself on the Dvorak keyboard, which I'd used in the waning days of the IBM Selectric typewriter era. The Dvorak keyboard layout was more efficient than QWERTY, but my wrists and forearms still hurt.

Finally, in desperation, I remembered seeing a weird-looking "Maltron ergonomic keyboard" in *PC Magazine* back several years earlier. The product looked like a keyboard designed by Salvador Dali on a hot day in Catalunya: it had an undulating surface with two large concave depressions for the alphanumeric keys, two smaller angled depressions for the "e," "enter," arrow, and control keys, and a numeric keypad plunked down in the middle. I contacted the U.S. representative of the small British firm that made the keyboard and got a sheaf of glowing testimonials from English secretaries and accountants. The testimonials read like excerpts from an infomercial script, but they were convincing - and the fact that Maltron also made one-handed and mouthstick keyboards for the handicapped suggested that the company took its rehabilitation role seriously.

A few days after getting the data sheet and testimonials, I wrote a \$750 check for a Maltron keyboard. I had to wait a month for the keyboard to be delivered from England by air-mail, since it needed to be handmade at the inventor's back-garden workshop in Surrey.

Finally the Maltron keyboard arrived. From the minute I tried it, I could feel the benefits of its unusual concave design. I could rest my elbows on my chair, with my arms angling in toward the keyboard instead of being forced into a parallel position. My cupped hands rested naturally on the keys, and there was no strain along the back of my hands, my wrists, or my forearms as I reached for the keys of the top and bottom rows without stretching my fingers.



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I'd decided to learn the proprietary and reportedly more efficient "Malt" layout instead of using the Maltron's version of the QWERTY layout. (The keyboard has a key that allows switching back and forth from Malt to QWERTY.) For about a month, I made constant typographical errors as I retrained myself after years of typing on QWERTY and Dvorak keyboards. Soon, though, I got used to the new layout, and I was able to type at 85 wpm or better - not quite as fast as the 106 wpm that I once scored on an IBM Selectric II, but not bad for a typist who had been in severe pain a month earlier.

That was back in the early 1990s. Today, I can't play the piano without pain, and my wife is the person in the family who opens jars with tight lids, but I can type all day long without a trace of discomfort. And yes, I credit this "miracle cure" to the Maltron Keyboard.

If you're suffering from wrist pain, should you invest \$750 in a Maltron keyboard? Fortunately, you don't have to make that decision, because the keyboard is now manufactured under license in the U.S., where it sells for \$175. Not only that, but it comes in both PC and Mac versions.

I'm not a physician, and I don't claim that the Maltron will cure wrist pain for every typist with repetitive stress injury (RSI). But at \$175, it's a lot cheaper than wrist surgery - and if my experience and other user testimonials are any guide, it's well worth the price.

For information on the Maltron ergonomic keyboard, see the British manufacturer's Web site at www.maltron.com and the U.S. licensee's site at www.teleprint.com. ♦

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Look no further! Computone's IntelliServer *PowerRack* is exactly that! In comparison to Livingston's Portmaster, the PowerRack has a per port capacity of **921.6Kbps** (Portmaster -- 115.2Kbps), the PowerRack can support **16-64 PPP lines** (Portmaster -- 10-30), the PowerRack's average price per port is \$60 for 64 ports (Portmaster -- \$97 for 30 ports), and the PowerRack has a **5-year warranty** (Portmaster -- 1 year), FREE lifetime technical support and software upgrades, and a 30-Day evaluation option.

The PowerRack also has the standard feature list: dial-in/dial-out access, a powerful RISC CPU, Ethernet connectors, ISDN capability, PPP, SLIP, CSLIP, *bootp*, *rlogin*, *telnet*, reverse *telnet*, PAP/CHAP authentication, RADIUS II, RIP II, SNMP MIB II, subnet routing, IPCP DNS exts. for Windows 95, and IP filtering.

PowerRack user and Internet Service Provider Michael Behrens, of InterNet Kingston (mbehrens@kingston.net), commented, "The PowerRack is an attractive product, both in its ability to do the job well and to do the job... cost effectively. Port for port costs are significantly lower than the Livingston Portmaster. The product lives up to its name... performance under load is exceptional! The PowerRack also offers a significant feature for feature comparison against the available competition (i.e. Livingston Portmaster). And, technical support was extremely knowledgeable and responsive."



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CONSUMMATE WINSOCK APPS

by Forrest Stroud

WAITING, WAITING, WAITING FOR WINDOWS 98

The applications reviewed here and many more are available at Stroud's Consummate Winsock Apps List, cws.internet.com and www.stroud.com.

Forrest Stroud currently works in College Station, Texas as a web developer for Mecklermedia Corporation. He recently graduated with honors from The University of Texas at Austin. The Information Systems and Data Communications Management major enjoys spending what little free time he has with his wife Joanne and the "zoo" - an ever-expanding collection of pets that currently consists of a Dalmatian pup (Svoda Pop), a chocolate lab cross (Roemer), a German Shepherd pup (Marius), and a pair of rascally kittens (Odie Pez and Bo Miggy). Animal lovers can check out pictures of the pets on Stroud's home page at home.sprynet.co/m/sprynet/neurooses.

I'm what marketing gurus call an "early adopter," which is someone who lives on the forefront of technology and is usually one of the first in line to purchase the latest software and hardware products. This is an attribute that makes itself evident throughout CWSApps and is also one that many users of the site can relate to. One of the major roles CWSApps plays is to give its users an opportunity to try out the latest software the day - or even the hour - it is released. And in many cases, CWSApps makes it possible to try out commercial software well before the public ever has the chance to get its hands on the products.

Large software companies have only recently begun to realize the benefits of releasing beta and trial versions of their products to a community of early adopters, but during the last few months corporate software developers have started to follow the lead of their smaller competitors en masse. As a result, through sites like CWSApps users can now get their hands on beta and demo releases of the most popular commercial apps, including Outlook 98, Eudora Pro, Internet Explorer, Netscape Communicator, and Frontpage 98, well before anyone else.

In fact, about the only product not available over the Net these days is the operating system itself, and this is due more to the fact that the OS is simply too large to effectively download than anything else. Unfortunately, this is a situation that won't be changing anytime soon, and when it comes to the hype of Windows 98 the scenario is even more drawn-out. In Windows 98 and other cases, the result is inevitably impatience from users in not being able to download the latest OS version like they can everything else and frustration from web developers like myself in not being able to deliver the one product that everyone is waiting and hoping for.

The good news is that you can purchase your own copy of Windows 98 (Beta 3) from Microsoft's web site right now (www.microsoft.com/windows/promo/win98preview7), and the official release is expected to go on sale June 25th - right about the time this column hits newsstands. For those of us who just can't wait until then, check out a couple of critical Windows updates that will be included with Windows 98 and Windows NT 5 and also an Explorer replacement for those tired of living with the current Windows Explorer's shortcomings (most of which are likely to plague Windows 98 and NT 5 as well). While not the perfect panacea all of us early adopters would like to see, hopefully, these apps will provide a bit of cake until we can get our icing, too.

PowerDesk Utilities 98

Desc: A natural born Explorer-killer - a powerful and inexpensive file manager suite
Pros: Windows Explorer on steroids, excellent suite of file manager tools, PowerDesk toolbar wizard, inexpensive
Cons: Interface could be a bit more polished, customizable toolbars need more configuration options
Location: [ftp://ftp.mijenix.com/pub/pd98eval.exe](http://ftp.mijenix.com/pub/pd98eval.exe)
Status: Free 30-day evaluation. Shareware - \$39.95
Platforms: Windows 95/98, Windows NT
Company: Mijenix Corporation
Website: www.mijenix.com/powerdesk98.htm

While Windows Explorer is definitely several steps up from the File Manager of Windows 3.x days, for many power users Explorer still doesn't quite get the job done. And judging from the beta releases, it doesn't look like much will change with Windows 98. As of Beta 3, the Windows 98 Explorer still lacks features like customizable toolbars, options for multiple window panes, folder comparison and synchronization tools, the ability to change fonts and other layout controls, and file filtering capabilities. The lack of configurability alone is enough to set many power users on a search for something better.

Thankfully there are alternatives to the Windows Explorer, and one of the best has to be the inexpensive (\$39) PowerDesk Utilities 98 from Mijenix Corporation (the same company that develops ZipMagic). PowerDesk has actually been around for several years, but only the most recent version has been able to integrate advanced features and functionality into an interface that is professional and powerful enough to serve as a viable replacement for Explorer. The core of the client is PowerDesk, which provides an interface similar to Explorer but with a variety of features and enhancements that you won't find in Explorer. Augmenting PowerDesk are several supporting tools that add even more functionality to the 'Explorer-killer'.

PowerDesk features include customizable toolbars, dual pane options that allow you to display two directory listings side-by-side vertically or horizontally, a customizable launchbar that you can use to quickly launch your favorite applications with one click, a 'one level up' icon within the directory structure that allows you to quickly move up a directory level, file fil-

tering capabilities for displaying only files of a certain type, file encryption/decryption options (use of the advanced DES encryption technology is restricted to U.S./Canada use), the ability to change the display font type and size, and folder comparison capabilities.

The PowerDesk is just the beginning of what this file manager suite has to offer. Supporting applications include the PowerDesk Toolbar, a customizable toolbar that you can use in place of or in addition to the Windows Start menu toolbar; folder synchronization tools that will quickly synchronize two folders on the same computer or over two networked computers; an enhanced file finder that gives you more advanced choices for finding files on your computer (or a networked computer) and also allows you to view files within the finder; a size manager tool that gives you a graphical view of the file size for each directory on your hard drive; and a dialog helper that enhances common file dialogs with folder and file tracking capabilities (customizable memory settings for your applications and folders).

Additional features in PowerDesk Utilities 98 include built-in zip and unzip capabilities (what else did you expect from the developers of Zip Magic?); support for a variety of compression formats (zip/unzip as well as cab, arj, arc, lzh, z, gz, tar, rar, and zoo); single image and batch image conversion capabilities for more than twenty different graphics formats; a fully integrated file viewer that offers support for over eighty file formats, including HTML pages (not available in the downloadable evaluation release but included in the registered version); and an e-mail attachment decoder with the ability to automatically decode UUencoded, BinHex, MIME (Base 64), and XXencoded messages and also to encode UUencoded messages.

There isn't much to complain about in PowerDesk Utilities. It would be nice if there were a few more options for the configurable toolbars (large/small icons, with/without text labels, etc.), and the interface could also benefit from being a bit more polished (and more in line with the Windows 98 interface). But overall, if you're a power user looking for more versatility and functionality than the regular Windows Explorer provides, PowerDesk Utilities 98 is the perfect alternative. And even if you aren't currently looking for an Explorer replacement, you'll still want to check out the multitude of supporting utilities that can help make working in a Windows environment more productive and efficient.

Windows Sockets 2 upgrades the WinSock 1.1 TCP/IP system present on nearly all Net-enabled Windows 95 platforms. If you connect to the Internet using Microsoft's DUN client, you'll definitely want to download the Winsock2 update. In fact, the only Win 95 users who won't want to upgrade are those using non-Microsoft TCP/IP stacks from vendors like Chameleon or Trumpet Winsock.

This Winsock2 update provides numerous performance enhancements over the 1.1 release and also resolves several issues with the earlier Winsock2 release, including incompatibilities with Internet Explorer 4.0 that could result in page faults, problems with IGMP V2 support that could cause applications to drop out of multicast groups, and slow performance with some IPX applications. (The earlier version of Winsock2 was available only as part of a Microsoft Software Developers Kit.) Network performance improvements over WinSock 1.1 result from new features like large windows, selective acknowledgments, and fast retransmission and recovery.

Winsock2 updates your TCP/IP stack and numerous winsock files, including the wsock32.dll file, but it doesn't update the 16-bit winsock.dll file. So any 16-bit net applications that you're using will continue to perform under Windows Sockets 1.x instead of Winsock2. Your 32-bit applications, on the other hand, will be able to take full advantage of the new release. Look for updates of your favorite apps to be released in the future with Winsock2 optimized code, which will allow the apps to perform Net functions even faster. (ConferenceRoom 1.5 is one of the first apps to do so.)

Winsock2

Desc:	A critical upgrade for most anyone with a Windows 95 'net connection
Pros:	Improved performance for 32-bit net apps on Win 95 computers with MS TCP/IP stacks, free update
Cons:	Will only work on Win 95 computers with a Microsoft TCP/IP stack (not on non-MS winsocks)
Location:	www.microsoft.com/windows/download/ws2setup.exe
Status:	Freeware
Platforms:	Windows 95
Company:	Microsoft Corporation
Website:	www.microsoft.com/windows95/info/ws2.htm

The Winsock2 update will only install on Windows 95 computers. (Winsock2 is included with Windows NT 4 and Windows 98.) If you're going to be installing the Microsoft Dial-Up Networking (<http://cws.internet.com/32msnet.html#ms95dun>) client as well as the Winsock2 update, make sure you install MSDUN first. If installed after Winsock2 the MSDUN client will overwrite wsock32.dll and other winsock files, so you won't be able to benefit from Winsock2. For additional installation issues, check out Microsoft's Winsock2 page at www.microsoft.com/windows95/info/ws2relnotes.htm.

Microsoft DirectX

Desc:	The latest set of drivers designed to enhance games that support DirectX
Pros:	A must-have for games that have been written for DirectX, MMX support, freeware
Cons:	Not all games make use of DirectX, no support for Windows 3.x, partial support for NT 4
Location:	www.microsoft.com/msdownload/directx/dxf/enduser5.0/dx5eng.asp
Status:	Freeware
Platforms:	Windows 95
Company:	Microsoft Corporation
Website:	www.microsoft.com/directx/default.asp

DirectX is a set of drivers developed by Microsoft that have been designed to provide programs (specifically games and high-end multimedia applications) with high-performance, real-time access to your computer's audio and video hardware. While DirectX 5.0 will be included with Windows 98 and

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Windows NT 5, for Windows 95 users this upgrade is the only way to get your hands on the latest DirectX technology. The current release of DirectX consists of five major components - Direct3D, DirectInput, DirectPlay, DirectDraw, and DirectSound.

Direct3D delivers real-time full 3D rendering and transparent access to hardware graphics acceleration boards. In other words, it allows Windows to make use of the advanced graphics capabilities found in 3D hardware graphics boards. DirectInput allows Windows to quickly and consistently access analog and digital joysticks. DirectPlay is an interface that simplifies playing games online. It makes it possible for the game players' computers to interact independently of the underlying service or protocol. DirectDraw is basically a memory manager for your video memory. DirectSound provides direct access to your sound card and provides additional functionality while maintaining compatibility with existing drivers and programs.

While DirectX was primarily designed for Windows 95 and the upcoming Windows 98 and NT 5 operating systems, a subset of the DirectX drivers is also currently supported by Windows NT 4. These DirectX drivers will work with any game that has been written to take advantage of DirectX. The latest release of DirectX, v5.0, adds several important improvements, including support for multiple monitors (in Windows 98/NT 5), a new DirectX control panel, a Game Controllers control panel, improved MMX support, a revised user interface, and support for force feedback controllers. For more information on DirectX, check out The Adrenaline Vault's DirectX FAQ (www.avault.com/hardware/directx.asp) DirectX FAQ or Microsoft's own Direct X web site (www.microsoft.com/directx/default.asp).

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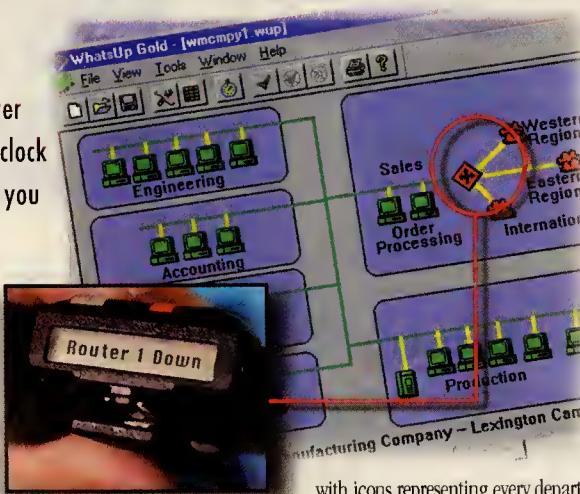


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TUCOWS

Scott Swedorski

FOLLOW YOUR STOCK MARKET INVESTMENTS

Have you jumped on the stock market bandwagon yet? With the Dow over 9,000 for the first time in history, many timid investors are getting tempted to jump into the fray.

Scott Swedorski is president and founder of TUCOWS, The Ultimate Collection of Winsock Software. He lives in Flint, Michigan with his wife, Vicki and 2 daughters, Emily and Ashley. After joining the army at the tender age of 17, Scott received his degree in Computer Information Systems from Mott College, and received an Honorable Discharge after 8 years service. Scott welcomes input from Internet users and software developers at tucows.com.

It's not difficult to find free or inexpensive stock market programs — the most commonly sought-after feature is real-time quotes. If you are seeking this service, expect to pay an access fee. Of course, this is not a pivotal concern for the wise "buy and hold investors," but it is crucial for more adventurous stock market gamblers. If you are a savvy investor, you already know which stocks to pick, now you have to decide which of the dozens of brokers and online stock services to pick from.

Market Analyzer for Windows

Version Number:	1.1 s
Revision Date:	January 15, 1998
File Name:	mawin11s.zip
Byte Size:	2,670,627
License:	Shareware
Home Page:	http://www.magicnet.net/~jdowdie/MAWIN.html
NT Compatible:	No

Market Analyzer for Windows (MAWIN) is a tool for creating and maintaining historical stock quote files, and viewing and analyzing the resulting historical data. It is capable of tracking thousands of daily stock or futures' quotes with very reasonable daily download times.

MAWIN comes with several web page quote lists along with configuration files that enable you to download about 600 (or more) stock quotes per day, with a virtually unlimited time span and number of stocks. The program will display and print output in graphical high/low/close or textual form, and provides analysis,

Personal Stock Monitor

Version Number:	2.5.5
Revision Date:	April 5, 1998
File Name:	psm255.exe
Byte Size:	1,539,040
License:	Shareware, 30 day evaluation
Cost:	\$25.00
Home Page:	http://www.personaltools.com/

including Simple Moving Average (SMA) and Polynomial and Fourier Fit.

Designed to make simple the routine and time-consuming problems of tracking stocks, **Personal Stock Monitor** offers many of the best features found in the competitors. All quotes are brought to you (usually 10-15 minute time delay), right to your desktop, in an easy to read environment.

Quote Grabber

Version Number:	0.4 beta
Revision Date:	February 20, 1998
File Name:	QGsetup.exe
Byte Size:	855,625
License:	Shareware, 45 day evaluation
Home Page:	http://www.aparima.com/quote
NT Compatible:	Yes

Quote Grabber is a pure JAVA stock quote tracking utility that offers excellent portfolio management, and options galore. It can also be included in a web page. With drag and drop, multiple alert types with extensive configuration possibilities, this one is loaded with all the best and works on any platform that runs the JRE.

QuotesNow!

Version Number:	1.4
Revision Date:	March 19, 1998
File Name:	quotenow.exe
Byte Size:	2,131,884
License:	Shareware
Cost:	\$26.95
Home Page:	http://www.quotesnow.com
NT Compatible:	Yes

QuotesNow! accesses many free quote servers on the Internet to bring you quotes on stocks, options, mutual funds, intra-day graphs, closing graphs, news and much more! You can keep track of your stocks all day by setting alerts to let you know when you want to take a closer look at what is happening. Perhaps the most configurable of all the quote programs we've seen on TUCOWS.

Wall Street Explorer

Version Number: 1.13
Revision Date: January 21, 1998
File Name: wsx113.zip
Byte Size: 1,819,921
License: Shareware
NT Compatible: Yes
Home Page: <http://www.latte.com/wsx>



Wall Street Explorer (WSX) is a shareware security tracking system. WSX automatically downloads the latest price data for your securities from publicly accessible quote sites on the World Wide Web. Features include real time quotes supplied by DATEK (requires DATEK account); monthly, weekly, daily and intra-day charts; quote data for options, bonds, mutual funds, commodities, futures, etc.; price alerts — multiple alert types designed to inform you when your price target is reached; the latest news from a variety of news providers; multiple portfolio management; ASCII export capability; and context sensitive help.

WinMidas

Version Number: 2.1
Revision Date: July 22, 1997
File Name: wm21demo.zip
Byte Size: 855,625
License: Demoware
Home Page: <http://www.winmidas.com>
NT Compatible: Yes



WinMidas provides a user-friendly Windows application of the MIDAS (Market Interpretation/Data Analysis System) approach to investing. Feature packed and rich with details, WinMidas is definitely one worth checking out!

WinStock

Version Number: 1.15.1
Revision Date: January 20, 1998
File Name: ws1v15.exe
Byte Size: 2,456,608
License: Shareware
Home Page: <http://www.winstocksw.com>
NT Compatible: Yes



WinStock is a stock tracking program that provides 15-minute delayed quotes on stocks, mutual funds, money market funds, options, non-US exchanges, bonds and commodities. It includes a portfolio manager with printed reports and automatic price export to Quicken (including Version 6). It also includes news, charts, a ticker toolbar, portfolio management, and printed reports. WinStock can retrieve quotes from nine different quote servers.

WinStock PRO is an enhanced stock portfolio manager that includes support for multiple portfolios, commissions, cash and automatic foreign currency conversions. New alarms and indicators including percentage change, profit/loss, and volume changes. Includes e-mail, pager support and much, much more. A worthy upgrade from the basic version.

MAC PICKS

Macintosh users have fewer choices in stock market software, but there are still two quality products available.

Stock Tracker

Version Number: 2.7.1
Revision Date: January 8, 1998
File Name: tucows_stocktrack.hqx
Byte Size: 78,587
License: Freeware
Author: Jeff Russell



Stock Tracker enables you to keep track of stock purchases and sales transactions. It also allows you to see which shares of stock you have available to sell and how much you paid for them. You can also calculate the value of the portfolio by entering the current market prices. Password protection is offered for your data files. Future versions may import stock prices off the Internet to calculate portfolio values.

Stock Updater

Version Number: 1.1
Revision Date: March 4, 1997
File Name: stockup.hqx
Byte Size: 10,232
License: Freeware
Author: Clynton Caines



Stock Updater is a system for updating stock prices automatically. The system involves viewing a free web page (Yahoo's stock page), that usually has 15 minute deferred quotes, at a constant rate. What results is a new web page that updates its information by itself.

Basically, it's just an HTML page that you open with your browser. It's easy to customize, so you can keep tabs only on the stocks you want.

It's important that investors know as much about the markets as they do about their software choices. Investing, as it is often practiced in these volatile days, is often risky business. Never lay down more on the table than you can afford to lose. Study the companies that catch your eye and learn as much as you can about the markets and your favored sector before you invest.

Good luck! ♦

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SURVEY SHOWS MATURING ISP INDUSTRY, INCREASED RISKS

By Bill McCarthy

A management consulting company that specializes in serving Internet service providers says it finds evidence that the ISP industry is maturing in its analysis of a survey of small- and medium-sized ISPs and that the competitive risks for small players are rising.

Executive Strategies surveyed 607 ISPs by e-mail during the last week of February and the first week of March with ten survey questions and several general information questions. The targeted ISPs have revenues of \$1 million to \$3 million and 2,000 to 10,000 customers. More than 70 percent had less than 20 employees, and most of the ISPs have been in business for three to five years. The responses reflected an even distribution across the country, said the company, which is based in the San Francisco Bay Area.

Three out of four ISPs surveyed said they use advertising to help grow their business and 50 percent are developing new products and services. "We believe that this represents a maturation of the industry. Barely two years ago, the vast majority of ISPs offered Internet access only, mostly through dial-up modems. Many saw enormous growth satisfying the demand from the early adopters to the web and needed only to provide 'good service and no busy signals' to grow," Executive Strategies said.

Growth is more difficult now. Seventy-six percent of the ISPs said advertising and channel expansion is among the top three strategies for growing its business followed by offering new products and services at 48 percent, geographic expansion at 24 percent, and improving service at 19 percent.

Executive Survey says this "raising of the bar" brings with it the need for additional management skills and more expensive marketing for new accounts. Customers are demanding more

and increasingly look to their ISP to provide results, the company said. The entrance of less sophisticated users into the market base also requires new ways to attract them. And survey results reflect the ISPs' response to the widening base of users, according to Executive Strategies.

Most of the responding ISPs believe that further consolidation will take place, but they do not believe that it will affect them, according to the survey. More than 85 percent believe that they will be in business three years from now and beyond. Executive Strategies said its consensus is that the ISPs believe that the majority of the consolidation is taking place at the national and regional levels and that they are too small to be considered a threat to the large players. "The risk in this assumption is that the majority of the business customers using the web are being supplied by local ISPs and this has to be a primary target for the large players in the future," Executive Strategies said.

Most of the ISPs are ready and willing to sell their businesses. More than three of four or 77 percent said that they would sell, and 85 percent said they have already been approached by buyers. Obviously, anyone will sell for the right price. But Executive Strategies said: "However, for this group, the decision is made more difficult because they continue to see enormous growth in revenue despite the many risks. The founders of these companies are very proud of their accomplishments, are earning a decent profit, and we believe, are defining the small business person of the future. The fact that these entrepreneurs would sell their business indicates a level of concern about the future. It may also give them a sense of security knowing/thinking that they have some liquidity in their business investment."

NEWS SERVER

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Executive Strategies says “the real surprise” is that the small ISPs are growing new business

Executive Strategies says “the real surprise” is that the small ISPs are growing new business through geographic expansion. Several small players are even targeting the international market. While this is a natural outcome of the expansion of products and services provided by “the trunk providers” or national backbone providers and an attempt to keep up with the demands of customers, the irony is that these ISPs will find themselves competing with their peers. Noting that there have been several mergers of small ISPs in the past six months, Executive Strategies said: “We believe this is an effective way to expand geographically and will continue.”

The ISPs also say that staying competitive is becoming more difficult. One in three ISPs referred to “flexible pricing” as a competitive strategy, which Executive Strategies believes means price reductions, primarily to businesses. But the ISPs are also being squeezed from two sides. On the one hand there are ceilings set for retail business with the widespread acceptance of flat-rate pricing of about \$20 a month for dial-up access — notwithstanding the recent AOL and IBM consumer price increases, which remains close to that figure. So there is little opportunity to raise rates in the near term, but investment in new technology and capacity is expected to increase as are other ancillary costs. Keeping up with technological changes, such as expensive DSL technology, a move toward wireless, and investments in higher bandwidth will drive up costs. “While there is not much room to increase pricing, the

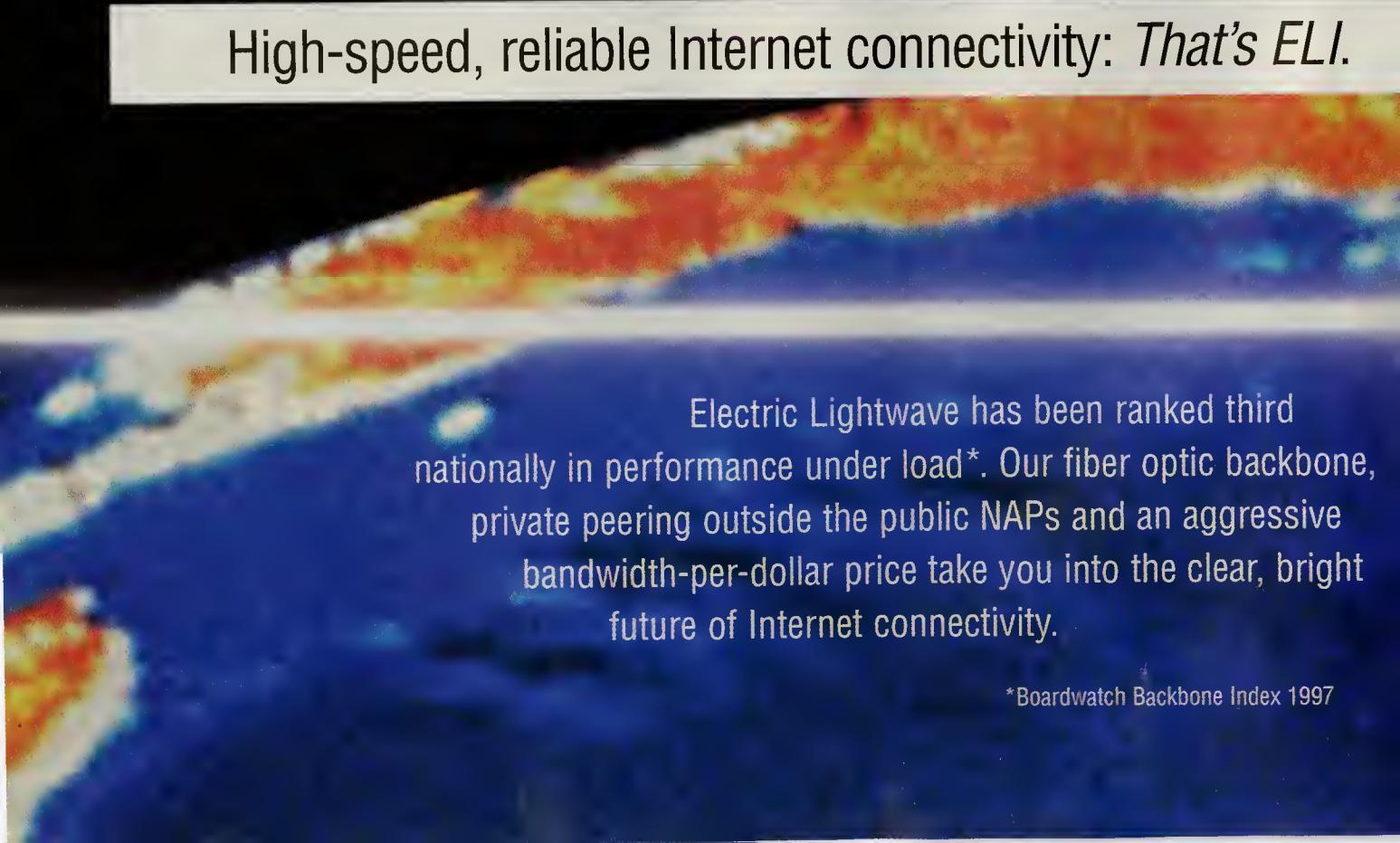
costs of staying competitive are increasing,” Executive Strategies says. ISPs will have to look for high-margin business to subsidize their core access services.

Twenty-four percent of the ISPs continued to indicate that they believe service gives them a competitive advantage. Thirty-three percent said they offer consulting as an additional service. And 33 percent also said they also offer pagers/telephony, while 29 percent said they offer hosting and 24 percent offer web design as additional services.

Nearly four of 10 or 38 percent, are concerned about the “big guys” — national and regional ISPs — and 29 percent mentioned cable modems as a major threat.

ISPs also make it clear that they do not want the government involved in the Internet business. The third highest risk behind the “big guys” and cable modems is government intervention, including such things as Federal Communications Commission regulations and fear of increased taxes. “We believe that the risk from larger competitors with deep pockets is real,” Executive Strategies says. “Price wars and buying market share with loss leaders are traditional tactics which can and will be used in this industry. So far the small ISPs have proven resilient and frankly more nimble than their larger competitors. Not having bureaucracies, they have been able to more accurately match their capacity to demand, and are

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*Boardwatch Backbone Index 1997

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offering new services faster than the national carriers. Cable modems and the bundling of services and billing, i.e. telephone and Internet access, remain a real threat. We believe that the level of risk is increasing for the small provider."

Twenty-four percent of the ISPs also said they face risks because of the difficulty in hiring and retaining competent employees as well as from price wars and predatory pricing by large players.

Seventy-five percent of the respondents said they have adequate capital to continue to grow their business. A minority, 5 percent, said they would do more if they had more money to invest. Most of the ISPs, 76 percent, receive capital from cash flow. And Executive Strategies believes that "this is one of the largest constraints for this group of ISPs." Since they are limited by cash flow and earnings, they will not be able to grow as fast in the future due to increased costs for new products and services.

Most ISPs consider themselves to be business oriented or balanced between business and consumer and virtually every one of them is offering other services in addition to access, the survey finds.

The survey is available at Executive Strategies web site: www.executivestrategies.com. ♦

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Abilene Lights the Track for a New Internet

by Bill McCarthy



When President Al Gore unveiled the bigger, badder Internet backbone on April 14. You can't use the enormous amounts of bandwidth that the Abilene Project promises, but Internet service providers will benefit from the research it produces as they build a faster and more efficient public Internet.

Two super-fast backbones, the Abilene Project and the vBNS will serve as Internet2 backbone networks connecting U.S. universities and provide researchers the opportunity to search for the black hole of bandwidth or holy grail of super pipes, while also experimenting with applications.

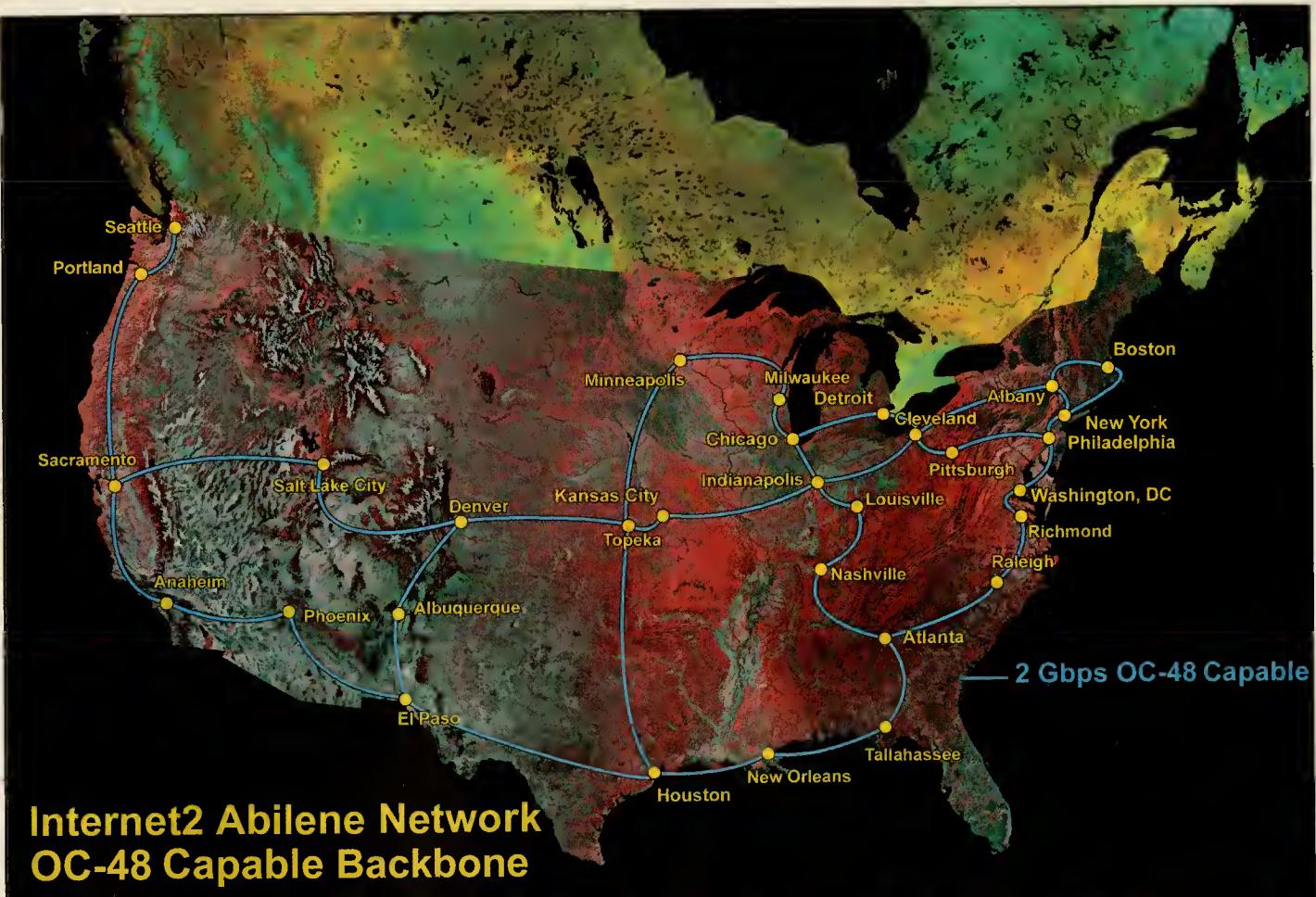
Just as the train was the symbol of the Industrial Age, which changed economic and social life in the nineteenth and early twentieth centuries, the Internet and the computer are the symbols of the Information Age, which is changing the way we live and will have even more dramatic effects in the twenty-first century. The Abilene Project is named after a pioneering railhead outpost in the rough and tumble American West, and much of the fiber that it will use is courtesy of Qwest Communications. The Denver company strung the fiber on old railroad right-of-way.

The information, hardware, software and applications the networks offer are intended to provide for the next generation of the Internet. At the same time, the technology and applications developed through several interrelated government, higher-education institutions and corporate partnerships, including Abilene, Internet2 and vBNS, are expected to speed up the public Internet and allow development of applications that would

move through the current Internet like a pig in a python. The networks will be "a test bed" for new designs for networking. The published results will benefit the public Internet where commercial uses of "pioneering work" can be used.

The Abilene Project, Internet2, vBNS become difficult to sort out, but they are different projects and even different networks, yet they are all interconnected. That is intentional. The networks comprise a sort of super-fast Internet in miniature with diverse players who have differing needs, just as the larger public Internet has extremely diverse players. But the mini-Internet offers two networks that cover major universities and computer research centers around North America, anticipating speeds no wide area network has exceeded before.

Abilene is a project of the University Corporation for Advanced Internet Development (UCAID) and several major telecommunications corporations. It is organized by UCAID in support of its members, more than 100 major universities and research centers, including many participants in the Internet2 project. A goal of the Abilene Project is to support and encourage the development of advanced applications for a variety of network protocols by UCAID university members and to support Internet2. The Abilene Project will develop an advanced back-



GIT' ALONG LIL' PACKETS

By Bill McCarthy

The Internet culture is influenced by the myths as well as the realities of building (or conquering) of the American West. The get-rich-quick attitude on an ever-expanding frontier seems to correlate with an ever-expanding frontier of bandwidth. The Abilene Project is named after a railway built from Texas to Kansas during the 1860s, and perhaps the story of the railroad development around Abilene, Kansas, then south to San Antonio, Texas, parallels the story of the Internet in many ways.

The University Corporation for Advanced Internet Development, which oversees the Abilene Project, says: "In its time the ambitious railhead of the 1800s staked a claim on what was then the frontier of the United States; the Abilene Project establishes a foothold from which to explore and develop pioneering network technology. The links of last century's railway changed the way people worked and lived. The Abilene Project will transform the work of researchers and educators into the next millennium."

In 1867, Joseph G. McCoy, a 29-year-old entrepreneur and the youngest of three brothers in a prosperous Illinois cattle shipping business - fast packet cows - seized an opportunity to establish a meeting place for drovers and buyers on the route of the advancing railroad that was about to acquire the name Kansas Pacific. He chose Abilene, as a sort of network access point, which he said was "a very small, dead place, consisting of about one dozen log huts, low, small, rude affairs." Sounds like a peering equipment room, but one of the trails up from

Texas to this little cattle trading spot had been laid out by a trader named Chisholm. The trader never knew how his little trail would last in Western lore, nor did he realize that he was creating a spur of famous network on the Chisholm Trail.

McCoy's choice was daring because Abilene was actually a little east of a quarantine line intended to keep cattle diseases like the Texas Fever in check. Public officials would have to be persuaded to overlook the illegality. After all government regulation impeded progress. Not one to be stopped by technical problems, McCoy bought 250 acres for a stockyard, planned for a hotel, livestock scales, and a bank and sent a rider to attract Texas herds with promises of friendly QoS and great synergism if they would bring their herds north from Texas.

All sorts of new commerce sprang up at the raw outpost, especially during the few months when the drovers spammed the town with cattle. Some of the new commerce was unwelcome, unless you were a lonely and randy cowboy in need of a stiff shot of rot-gut. But Abilene boomed, and in 1870 the federal government called it "the great primary depot of the Texas cattle trade." Fast packet cows flowed through town, and the town became known for huge business deals as well as violent Texas cowboys and the folks who made a living taking their money.

By 1872, the rowdiest of railheads moved farther west, following the frontier. Farmers and better rail networks, such as the spur to Abilene, pushed the rowdy cowboys to the next raw outpost. The new Abilene is a frontier with cowboy techno-geeks experimenting with the most sophisticated applications. Git' along little packets, it's your misfortune and none of my own. ♦

bone network to connect regional network aggregation points, called gigaPOPs, being developed by UCAID members and is intended to complement existing research networks being used by UCAID member researchers and educators.

Abilene and Internet2 are both projects of UCAID. They are interdependent and complementary, according to the corporation. The Abilene network, for example, supports the Internet2 project by providing an effective interconnect among the regional networking aggregation points, or gigaPOPs, created by Internet2 universities. Abilene's advanced capabilities will help Internet2 members develop and deploy new applications more effectively. Independent members of the Abilene Project and Internet2 working groups are attacking networking development issues, such as developing bandwidth management tools. These developing tools, for example, will set priorities for bandwidth usage by certain applications such as multicasting and security and authentication protocols. So, Abilene will support Internet2, and Abilene will support areas of network research outside the scope

of Internet2. The Internet2 project, started in 1996, includes more than 100 universities and a host of private company sponsors such as 3Com as well as its main sponsor, MCI.

Abilene will also support the Next Generation Internet initiative of the Clinton Administration. NGI is an initiative primarily among federal research agencies. But Abilene will be a new element of the partnership among universities, industry and federal agencies working within the fabric of the Clinton initiative. The next generation initiative is using government money to fund basic research about using the faster network. Clinton asked Congress for \$110 million for the next generation initiative in his fiscal 1999 budget. The Abilene network will also seek to interconnect with existing federal research networks, such as the very high performance Backbone Network Service (vBNS).

The vBNS is a network provided under a cooperative agreement between the National Science Foundation (NSF) and MCI Communications to connect NSF-approved institutions of research and higher learning. vBNS plays a role in the Internet2 project. Abilene provides a complementary alternative to the vBNS and other research networks. Each of these high performance networks will provide connections among the regional gigaPOPs built by Internet2 universities. Each institution will decide which networks provide the necessary capabilities for advanced application development on its campus. Some Internet2 universities are already connected to the vBNS. Not all Internet2 members will necessarily connect to Abilene. Any institution connected to one of the networks should be able to access an institution on the other, eventually. Together, Abilene and the vBNS offer an opportunity to test and develop new ideas and technologies in a variety of environments.

The vBNS theoretically can transfer data at a rate of 622 million bits per second. The network is expected to be upgraded to 2,400 million bits per second at some point.

Abilene adds an alternative Internet2 backbone network to the existing vBNS Internet2 backbone. Both provide advanced

IP connectivity, they do so using different underlying technologies. This is intentional. UCAID said: "This type of multi-vendor, multi-network development is especially important as technologies are moved out of the laboratory, put into use for research and education, and eventually driven into the marketplace by industry partners."

The government estimates that private investments in fiber and equipment are worth \$500 million. Qwest Communications International Inc. is making available part of its nationwide fiber network, and a large number of access points. Nortel is contributing switching and other equipment and Cisco Systems Inc. is providing GSR 12000 Series routers and software for links at up to OC-48 - 2.4 gigabits per second. While Abilene is developing the initial network with OC-48, it will also be working to develop additional links capable of operating at OC-192 - 9.6 gigabits per second and beyond, as it searches for that black hole of bandwidth.

Denver, Colorado-based Qwest, which strung its fiber along old railroad right-of-way, is also providing the backbone for the Corporation for Education Network Initiatives in California's project known as CalREN-2. The network should be live this month and link more than a dozen universities. It will access Internet2, as well.

Meanwhile Reuters and other news organizations quoted Qwest chief executive Joseph Nacchio as saying there was no connection between the April 14 announcement and his company's efforts to keep Net telephony unregulated. Qwest is rolling out a nationwide network to carry voice over IP. The Federal Communications Commission said firms that carry phone calls over the Internet should not be designated as long distance carriers. At the moment that means the ISP industry will not face new fees. But the FCC left the door open for future regulation on a case-by-case basis.

Initially, the Abilene Project will deploy a national backbone capable of operating at OC-48 among gigaPOPs, with OC-12 or OC-3 connections from the Abilene backbone to university gigaPOPs or to individual institutions. The design will initially be IP packet over SONET. As soon as new ways of opening more bandwidth are found, they will be deployed for the members to use and develop new applications. The collaboration is expected to last at least five years.

Broad geographic coverage is also important, according to UCAID. The Abilene network will offer access points-of-presence close to almost all of the anticipated universities' gigaPOPs, to keep down the cost of connecting. Most member universities will choose to connect to the Abilene network through a suitable university gigaPoP, but alternative arrangements will be considered. UCAID believes most gigaPOPs operators will want to make their own access arrangements and manage their own connections and downstream networks. To support the Internet2 project's goal of providing end-to-end advanced networking capabilities,



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UCAID may offer a separate service to assist members with the setup and operation of their Abilene connection, however. UCAID plans a "pre-production" mode during the last two months of 1998 with some or all of the initial members attached, and expects to have a limited demonstration capability available for the Internet2 project fall meeting. The backbone is scheduled to begin operating this year and be completely functioning by late 1999.

UCAID also said it expects to make arrangements with "suitable peer networks" for interconnection within the United States. The company also plans to connect to networks outside of North America. But no firm plans have been made.

But the Abilene Project is not just going to pump up bandwidth on the new Internet just by adding more fiber and bigger routers. Instead scientists will be looking to build more intelligence into routing and bandwidth management.

For example, one aspect of Internet2 is transforming two-dimensional video conferencing into a three-dimensional Virtual Reality (VR) experience that will let scientists or surgeons anywhere in the world manipulate the same information simultaneously in cyberspace as if they were in the same room. Should the packets carrying the e-mail you sent to your brother-in-law with the latest Internet Baby attachment have the same priority as doctors consulting on a heart transplant who are thousands of miles apart.

Douglas E. Van Houweling, UCAID's president and CEO, told the *Detroit Free Press*: "The real challenge is not squeezing

those things through the bigger information pipes we're creating, but developing the capability to share that pipe in an intelligent fashion."

Houweling said to the *Free Press*: "If your e-mail is delayed a couple of minutes to allow a video conference to go through, nobody is hurt." The Internet has no way to prioritize one type of traffic over another, Houweling said. "And because it doesn't have that mechanism, it can't support a quality of service arrangement whereby my computer can engage with a server and another computer elsewhere and be certain that a certain quality of service can be maintained to allow my application to operate."

Houweling says that the most important innovation that the project is focused on for Internet2 is to add additional protocol capabilities to the Internet "so that applications can request and be guaranteed the kinds of quality of service they need to do their job," Houweling said.

More information on the projects is available at www.ucaid.edu.

Gore also announced \$50 million in Internet-related projects by the Defense Advanced Research Projects Agency, the Defense Department's research office. It was that agency that laid the groundwork for the Internet, originally named ARPAnet. Gore said the Defense Advanced Research Projects Agency would invest the money in 27 long-term research projects. ♦

The advertisement features a large, stylized graphic of a globe with various text elements floating around it, including "technology", "consumers", "babb's", "dvorakonline", "education link", "sock apps", "books", and "Windows". Below this graphic is a large red phone number: 1-800-933-6038. To the right of the globe, the magazine's name, "Boardwatch Magazine", is written in large, bold, red letters. Below that, a tagline reads: "we've got an eye on the world of connectivity". At the bottom, a large red button contains the text: "To See What We Mean Call and Subscribe Today".

FCC TO SENATOR STEVENS: NO NEW ISP TAXES!

By Robert Cannon

Senator Ted Stevens, Republican of Alaska, is smart. He is also not your friend. If Senator Stevens had his way, ISPs would pay a "tax" into the Universal Service Fund and be regulated like telephone carriers.

Senator Stevens understands the Internet at least a little bit better than the average member of Congress. He understands that in time the Internet will replace the telephone network as we know it. It's not that Senator Stevens has anything against packet-switched technology. Instead, his problem is that telephone carriers pay into the Universal Service Fund — IP companies do not. Thus, if lots of people use IP networks instead of good old Ma Bell, that could mean a lot less money going into the Universal Service Fund.

Universal service is a concept from the turn of the century. At that time, AT&T graciously offered to become the official telephone monopoly of the United States in order to solve the problem of the multitude of proprietary telephone systems that could not talk to each other. AT&T had a slogan. It was "one system, one policy, universal service." Slowly the concept of universal service evolved from AT&T's strategy on how to get rid of its competition, to a valuable federal policy of ensuring that all Americans have access to basic telephone service at a reasonable cost.

When telephone service was essentially run by one company, universal service was a set of implicit subsidies. The lucrative parts of the network supported the expensive parts. For instance, urban areas subsidized rural areas and long distance subsidized local infrastructure. In this manner, universal service brought the cost of telephone service to rural areas down to affordable levels.

This is important to a state like Alaska, Senator Stevens' home state. The true cost of phone service in Alaska can be several hundred dollars per month. The only way that many parts of



Alaska can afford telephone service is through universal service support.

Along comes the Internet. Killer apps allow people to place what loosely resembles a long distance call "for free." They do this by utilizing a more efficient protocol and by bypassing fees and subsidies. The Internet does not pay long distance metered access charges nor does it contribute to the Universal Service Fund. A problem in the view of Senator Stevens.

To make matters worse, the Internet receives subsidies from the Universal Service Fund even though it does not pay into the Fund. The Universal Service Schools and Libraries Program provides discounts so that all schools and libraries can acquire Internet access. That subsidy is paid directly to ISPs. To Senator Stevens, this hardly seems fair.

Then it dawned on Senator Stevens. What if everyone started using packet-switched technology? What if Sprint or AT&T started transporting long distance traffic using packet-switched technology, claiming to be exempt information services? Why, the Universal Service Fund would go broke, and Alaska would lose a vital subsidy!

Therefore, last November, Senator Stevens (who also happens to be the Chairman of the Senate Appropriations Committee) demanded that the Federal Communications Commission provide a report explaining why ISPs get to take from the Fund when they do not have to pay into it. The FCC would also have to explain why something that looks like a duck, sounds like a duck, and smells like a duck, is not called a duck. In other words, why IP telephony calls are not treated as regular telephone calls when they resemble regular calls in almost every way.

As the Report deadline approached, a preliminary draft was leaked. It suggested a shift in FCC policy, indicating that Internet would have to come under the regulatory regime of the FCC and contribute to the universal service fund. FCC

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Chairman Kennard was furious at the leak. The White House let its displeasure be known as well, firing off a letter that told the FCC to back off any notion of regulating the Internet (no matter how much an Internet telephone call might smell like a duck). While the FCC is an independent agency, not under the control of the White House, the effect was felt.

On April 10, the FCC filed its report with Congress. Having reviewed several hundreds of pages of formal comments, 5,000 e-mails, and the proceedings from two FCC hearings on the subject, what did the FCC conclude? That it had gotten it right the first time. The FCC reaffirmed the findings of the original Universal Service Order that information services are not telephone carriers, that they do not have to directly contribute to the Universal Service Fund, and that they are indeed eligible to receive subsidies from the Universal Service Fund.

The FCC affirmed its long held distinction between telephone service and information or enhanced services. In proceedings dating back to the 1970s, the FCC considered the implications of having data services layered over the telephone network. Consumers would provide information, which is processed and information is returned. The FCC was not exactly sure what to make of this, but it liked it. To encourage the new enhanced services market, the FCC established a "temporary" exemption from telephone regulations and fees.

So what is the difference between telephone service and information service? The FCC affirmed that "basic" telephone service is the offering of "pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer supplied information." Other than processing the telephone number, a telephone carrier has no interaction with the content transmitted.

So what is enhanced service? Basically, it is everything else. For example, an Internet service connects a consumer to a server, permitting the consumer to issue commands, which manipulate the server and cause information to be returned. In addition, the FCC decided that everything in between enhanced and basic would be called enhanced as well, just to make things easier.

Senator Steven's real concern was money. He believes that the Internet is a threat to the Universal Service Fund. The FCC concluded that he is wrong.

The FCC pointed out that enhanced services, which are basic services plus a little bit more, always involve basic services. Those basic services contribute to the Universal Service Fund. Residential consumers lease residential telephone lines. The consumer pays flat-rate access charges and fees that support universal service. Increasingly, residential consumers lease secondary lines for data, lines that have even higher fees. ISPs lease business lines for incoming consumer calls. They pay access charges and universal service fees on the hundreds of lines they lease. Then ISPs lease "luxury" high-speed lines to connect to each other. These luxury lines have luxury price tags embedded with universal service costs. Thus, while ISPs may not write checks directly to the Universal Service Fund, their indirect contribution to the Fund is substantial. As increased Internet use leads to increased consumption of telephone services, there will be increased indirect support for the Fund.

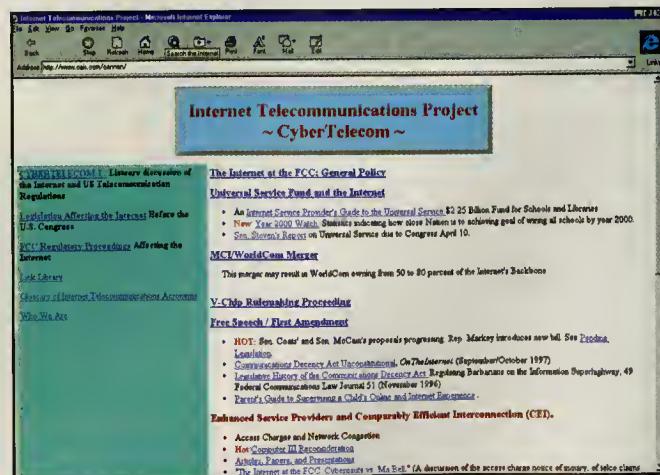
Of course, ISPs do not always use telephone services. There are some providers enterprising enough to provide their own bandwidth. This is cheating, according to the FCC. No univer-

sal service revenue is derived from these transmissions. Therefore, where Internet providers are providing not only the enhanced but also the basic service, the FCC indicated that it would have to reconsider whether these providers would have to contribute to the Universal Service Fund.

Which brings us back to the problem of the duck: what to do with IP telephony, which in every other way resembles a regular telephone call. With some IP services, both the caller and the receiver use regular telephones. Here the FCC said that although it would not call a duck a duck in this proceeding, it might soon. Here the FCC moved from looking at what the Internet is to looking at what the Internet does. When it does what a regular telephone call does, with essentially no enhanced service, then perhaps it should be regulated like a regular telephone call. The FCC indicated that it would look at this question on a case-by-case basis.

A few things are clear from the Report. The FCC is changing its position. Although the argument that the Internet should be regulated did not succeed, it made an impact. The FCC has indicated that it will maintain its regulation-free-Internet policy, only now with exceptions. The concept that the FCC will proceed with Internet regulation on a piecemeal exception basis should bring joy to publishers of federal regulation and to lawyers. This patchwork style of regulation leads to lots of legal proceedings and a complicated regulatory environment. It is not necessarily the best stuff for ISPs.

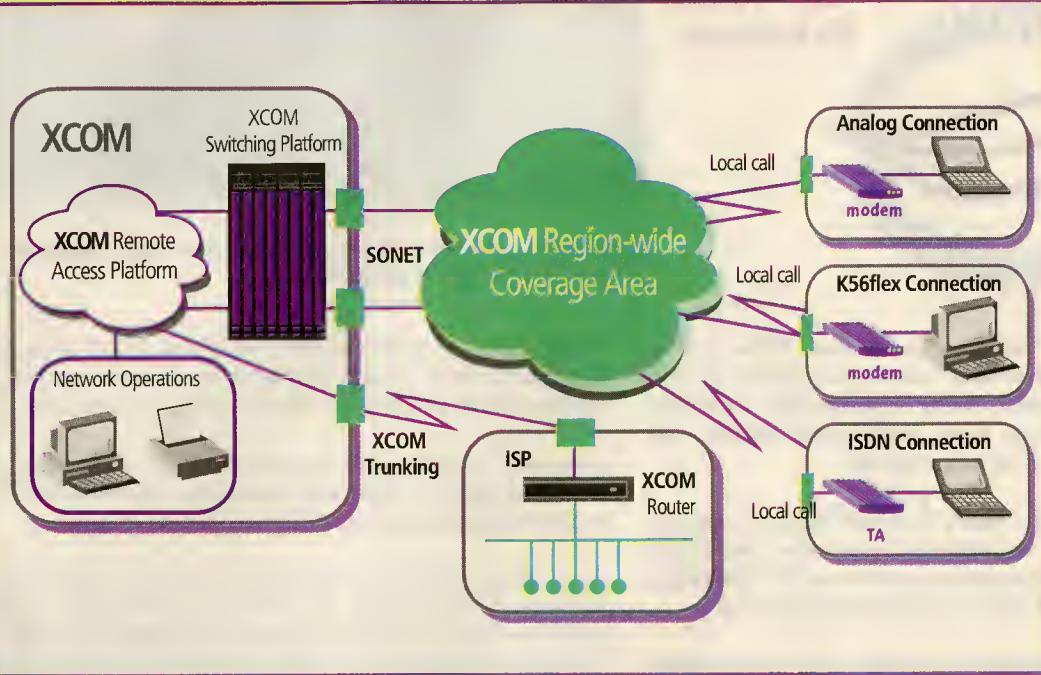
As the dust settled after the FCC Report, Senator Steven's declared that "the FCC got it wrong." But perhaps he spoke too soon. Perhaps the FCC gave him almost what he asked for. His concern is that when the network changes from the Internet layered on top of the telephone network to voice layered on top of a digital network, everyone will be classified as exempt information services. But the FCC clearly stated that when Internet providers become bandwidth providers, then the FCC will strongly consider imposing universal service obligations. The FCC Report reads like the Net would remain a layer on the voice network. But knowing better than this, the FCC has laid the foundation for regulating the future communications network. ♦



Robert Cannon, is founder of the Internet Telecommunications Project. His web site is at www.caist.net/cannon/ and his e-mail address is cannon@dc.net.

"A Price Break for ISPs"

—tele.com, January 1998



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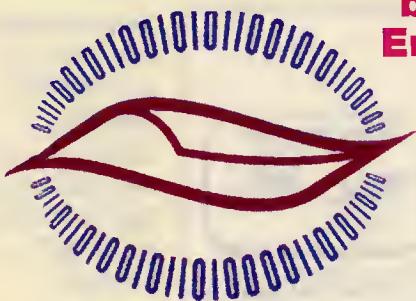
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SENDMAIL GOES PRO

by Todd Erickson



Long-time friends Eric Allman and Greg Olson have designed a commercial version of sendmail.

Today, e-mail is as common as million dollar utility infielders. Last summer there were an estimated 70 million people using e-mail. Today that number is thought to be around 90 million, and some predict that by the year 2005, one billion people will be using e-mail.

A survey by Ernst & Young of more than 400 human resources executive at the American Management Association conference in New York City found that e-mail has overtaken the telephone as the most frequently used business communication tool.

We send e-mail across the office and across the world, without giving thought to how the message gets from one computer to the next. We don't consider the complexities of how thousands of networks transfer messages around the world, and how hundreds of different e-mail programs can read the same e-mail messages.

THIS KID HAS TALENT

There was a time when your e-mail address differed depending on what e-mail program the recipient used and what network he or she was on. Imagine trying to put that on a business card. Transferring a message from one network to another was a nightmare.

Then came Eric Allman, and the e-mail system we know now was created.

In 1977, Allman, then a full-time programmer, and master's degree student at the University of California at Berkeley decided the University needed a program that would allow e-mail to traverse multiple networks, and be read by any type of e-mail program.

Sendmail was born.

Sendmail is a freeware program that routes e-mail messages between networks and allows any type of e-mail program to read e-mail produced by any other e-mail program. Sendmail was originally designed to route e-mail between Allman's UC Berkeley computer system and others on UUCP, a network that connected university campuses, and one of the original networks that now make up the Internet.

Today, over 1.2 million servers, or 75 percent of all servers run sendmail as their e-mail gateway to the Internet, and 18 original equipment manufacturers include sendmail with their products.

Sendmail's source code has always been distributed as free-ware, and many developers and users have contributed to its evolution by testing and refining the source code.

At a recent Freeware Summit hosted by Tim O'Reilly, of O'Reilly & Associates, in Palo Alto, California, influential members of the freeware community decided to change the "freeware" name to open source software. Confusion arose as to the definition of freeware. Does freeware mean programs that are available at no cost, or programs whose source code is available to the general public?

To alleviate any confusion between the two categories of software, participants chose to adopt the *name open source software* for programs whose code is freely available.

SHOW ME THE MONEY

Now, long-time friends Allman, and Greg Olson, have started a company to sell a commercial version of sendmail, and to provide financial resources for the open source version.

Since his days at Berkeley, Allman has worked as a programmer, software engineer, and software development manager. From 1981 to 1988, Allman worked as a software development manager and programmer for Britton Lee, a developer of a high performance relational database system, in Los Gatos, California. While at Britton Lee, Allman met Greg Olson, who held marketing and technical positions with the company.

The two became close friends and kept the relationship after both left Britton Lee. Years later, Allman talked to Olson about his desire to spend more time developing and supporting sendmail.

Allman said he wanted the financial resources to support sendmail, and have the time to work on the program in ways he could not do while working somewhere else. Allman said he received 100 questions a day about the program, and did not



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*April 1998 Business Communications Review.

have time to answer the questions, work on the program, and work full-time. Allman's goal was to support himself, hire an engineer to work on future improvements to the code, and have some money left over for administration and support.

LOOKING FOR A GUARANTEED CONTRACT

Allman approached companies who adopted the freeware version of sendmail, and asked them to kick in money to support his organization. He found the vendors' attitudes fell into one of two categories. Either the vendors did not want to pay for a product they already had for free, or they wanted to own the live rights to the product in exchange for their financial support.

Last year, while consulting for Allman on technical and business strategy matters, Olson went to ISPCon '97, in San Francisco, California, to research the market for a commercial version of sendmail.

After speaking to hundreds of ISPs, Olson found overwhelming support and many reasons for taking sendmail pro.

First, potential commercial customers of sendmail want to use the product, but feel uneasy relying on a volunteer organization to support their entire e-mail system.

The volunteer support group was formed by Allman in 1995. The organization maintains a web site, the newsgroup `comp.mail.sendmail` and a large, open mailing list: `sendmail-announce@sendmail.org`.

Second, the freeware version was not "user-friendly," in that it was not easy to install, configure, or interface with.

GOING TO 'THE SHOW'

Allman and Olson organized Sendmail, Inc. in November of 1997. Allman is the executive vice president and chief technology officer, and Olson is president and chief executive officer.

Sendmail, Inc.'s first round of financing raised \$1.25 million. The second round, slated for later this year, is projected to raise another \$4 - 8 million.

The company's original goal was to produce \$40 million in revenue within the first three years of operation. Olson said that judging from the initial reaction from the Internet community, that goal is woefully short of the company's potential.

Sendmail, Inc.'s initial partners include national ISPs EarthLink and Erols. Olson said Sendmail, Inc. will include most large ISPs in a workshop approach. "We want to partner with ISPs to get it right," said Olson.

Sendmail, Inc. also has agreements with Infobeat, Sun Microsystems, Hewlett-Packard, Digital, and O'Reilly & Associates. Metainfo has developed a Windows NT version of sendmail.

Allman and Olson have set two simple goals for the company. First, provide the business community with a commercial version of sendmail that includes support and an easy-to-use package.

Second, use the commercial success and standing of Sendmail, Inc. to support the advancement and evolution of the freeware version of sendmail, and the open source community at large.

The anticipated commercial success of Sendmail, Inc. will allow Allman and Olson to hire more engineers to advance the sendmail code, allow the company to sponsor sendmail.org as a corporate sponsor, and provide funds to market the open source cause.

SUPPORTING OUR AMATEUR TRADITION

Another problem with solely offering a freeware version of sendmail is the threat of Microsoft type commerce. Currently, Microsoft Exchange owns about 1.3 percent of the market. However, Microsoft provides the commercial support and user friendly design the open source version of sendmail does not. Since customer support and easy-to-use, cost effective software is very appealing to system administrators, the potential threat is that companies like Microsoft will take over the market with no concern for the open source community.

Open source software developers cannot offer 24x7 support, QoS guarantees, slick graphical interfaces, and "out-of-the-box" installation and configuration. Without companies like Sendmail, Inc. supporting open source software, the open source community will disappear.

The freeware community has its own needs. First, as both Allman and Olson put it, the members of the open source community are not exactly millionaires. A freeware version of Sendmail is paramount. Second, the development community needs unencumbered source code to enhance the program and fuel further innovation.

FOR THE FANS

Sendmail plans to build upon the loyal customer base cultivated through years of sendmail use.

Both Allman and Olson vow to keep two separate product lines.

The first is the commercial version of sendmail, called sendmail pro. This version will include contractually guaranteed support, easy installation and configuration, and a user-friendly graphical interface. The first commercial version of sendmail, sendmail 8.9 pro, will feature web-based graphical tools to make configuration and management of sendmail servers easy and accessible to the average systems administrator, binary distributions for the leading platforms that eliminate the cost of configuring, compiling and testing releases from source code, and commercial support, training and consulting services.

The first commercial version of sendmail is expected to ship in the third quarter of 1998.

The second Sendmail, Inc. product will be the open source code version of sendmail. Allman said the code for both products will be the same, only the commercial version will add user friendly controls, installation and configuration. "The freeware will never become crippleware to get people to buy the commercial product," said Olson.

TOO MUCH BAD PRESS

Another issue commercial customers are interested in, is spam. The recently released final version of sendmail 8.9 free ware features the following spam controls:

35 Reasons



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- Real time blackhole list maintained at <http://maps.vix.com/rbl>.
- Regular expression matching on addresses (e.g., all-numeric user names can be rejected).
- Maximum Recipients Per Message option, to restrict large amounts of messages being sent at one time to multiple users.
- Method to extract all MX records for a given domain. This allows a site to relay only for hosts for which there is a valid MX server.
- Distinguish between temporary and permanent map lookup failures. This allows better rejection of SMTP envelope senders that have invalid host names.
- Allow message rejection on the basis of header contents. For example, messages with invalid Message-Id: headers or a "To: friend@public.com" header can be rejected.
- Limit the size of HELO/EHLO parameter to prevent spammers from hiding their connection information in Received: headers.
- New built in "discard" mailer to allow messages to be accepted and then dropped.

A complete technical description of changes in sendmail 8.9 is at www.sendmail.org.

Sendmail also has plans to release a hardware product, with the sendmail code already installed. The Sendmail server is anticipated to be released in 1999.

A hardware product for high-volume e-mail users (corporations, large ISPs, etc.) initially dubbed the Sendmail Enterprise, is under development for a year 2000 release.

Unlike some athletes who turn pro after a great amateur career, Eric Allman said he will continue to support the people that helped him succeed. Sendmail will not only remain an open source code for the development community, but now Allman will have the financial resources to support those who allowed him to reach the big leagues. ♦

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PROTECTING YOUR INVESTMENT BY BALANCING THE LOAD

by Grace Butland

I'm a marketing consultant, not a technology expert. My direct Internet experience has been limited to on-line research and e-mail. Frankly, I don't much care how the Internet works as long as I can find what I'm looking for — and find it quickly.

So why am I writing this?

Truthfully, my clients forced me to learn more about the Internet. They are owners of small- and medium-sized businesses who are adding web sites to their marketing mix. Many of them have bought into the theory that they need an Internet presence to survive and thrive. So I've been looking at the situation from a marketing viewpoint rather than a technological one.

Typically, my clients put a lot of time and effort into developing first-class web sites, complete with high-quality graphics, readable text and interactive features. They update them regularly to entice visitors to come back. They believe that if the content and design are right, the business will eventually come. But they overlook the importance of delivery — having the information easily and quickly available to the client. Unfortunately, all the time and money clients invest in developing and maintaining web sites can be wasted if their potential customers can't access their location.

It's not an overstatement to say that most Internet users demand instant gratification. According to research conducted by Georgia Tech, 10 seconds is the limit for keeping the user focused on the dialog, request, or search. If the response time is longer than 10 seconds, users will lose interest and become frustrated; at more than 30 seconds, users will likely cancel the request. They'll move on — perhaps to a competitor's site. So companies run a real risk of losing business if they can't provide a quick response to their potential customers. In fact, a "server down," "connection timed out," or "server busy" message is equivalent to a "closed for business" sign.

And that's where ISPs come in. Because most small- and mid-sized companies can't afford — or don't have the technical expertise — to install their own servers, they almost always rent server space from an ISP.

There are now over 4,000 ISPs across the United States and Canada. According to 1997 figures, the ISP market is currently worth \$8.4 billion and could grow as high as \$50 billion by the year 2000. Many believe there will be an industry shakeout, as the big guys gobble up the little guys. Perhaps you haven't had much competition in your geographic area in the past, but if you don't feel your competitor's breath on your neck now, you will soon. As customers have more providers to choose from, churning has become a concern with some ISPs reporting churn rates of over 30 percent. Faced with increasing competition for personal dial-up accounts, and increasing charges from backbone providers, many small- and medium-size ISPs are beginning to specialize in web hosting services.

ISPs are subject to the same marketing issues that face the rest of the business world — providing a quality product and excellent service at a reasonable price. In short, to retain their business customers, ISPs will need to meet those customers'

needs. A recent survey of ISP customers by TeleChoice Inc. (www.telechoice.com) found the top five attributes customers look for are:

Top Five Attributes ISP Customers Value

1. service reliability
2. service performance
3. speed and proficiency of technical support
4. price
5. competence.

In another survey, conducted by the Austin, Texas, firm Intelliquest Information Group Inc., only 43 percent of respondents rated their ISP service as very good or better.

I assume you've got the technical support, price, and competence covered. But to keep your business customers happy, you will also have to excel in service reliability and service performance. Tell a business customer that his site was closed down for a day while you upgraded a server and see how fast he runs to the competition.

How do you assure your clients that visitors to their web sites will receive a quick response?

One way is to buy a larger server. But even the largest server will have to come offline for service once in a while. You can buy additional servers and employ "round robin DNS," which randomly assigns hits to different servers. But this technology doesn't take into account whether the server is already overloaded or out of commission. One server can overload while there is spare capacity on the other servers, and users will still get "server down" messages.

Adding a load balancing system — a mechanism that will intelligently distribute incoming requests to your multiple web servers — is a better option. Load balancers sit between the routers and the network of servers. They actually factor in the processing power and capacity of your servers and route requests to the next available server. And, if a server goes down, they let you know about it and redirect traffic to live machines that can respond to the requests.

There are a variety of load balancers on the market — some are standalone hardware/software packages and some are software that can be loaded onto a network server. In either case, the load balancer intercepts the incoming web requests and decides which server should get the message. They do this by using proprietary algorithms to track the number of servers available, the CPU speed and memory of each, how many transactions are being serviced, and how long it takes a server to process a request.

When processing a request, load balancers basically work this way: when a request comes in, the load balancer keeps track of where it came from (IP address and TCP port), the destination port, and the IP address of the target web server. Using a virtual IP address for each web server in the server "farm," it then sends the request to the next available server.

Hardware and software load balancers differ in how they treat the virtual IP addresses when the response goes back to the browser. The hardware products use a version of the NAT (network address translation) scheme familiar to network gurus the world over. In case you're not a guru yet, address translation means that the load balancer acts like a router for the servers being balanced. All the packets to and from the servers pass through the balancer. On their way to the server the packets are "translated" so that each server thinks the requests were aimed directly at it. On their way back the pack-

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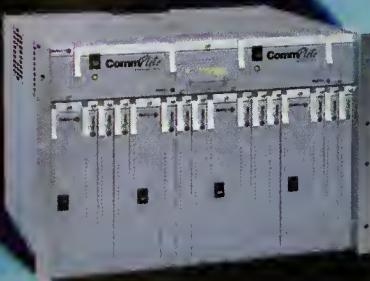
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ets are munged to look like they came from the balancer's IP address.

The key is doing all this so efficiently that the balancer never becomes a bottleneck. That's a tall order, but it can be done. Coyote Point's System, Inc.'s (www.coyotepoint.com) Marc Roth told me that their Equalizer product can handle a full T-3's worth of data and that one of their customers is balancing 15 servers without stress.

A real advantage to hardware balancers is that they're not tied to particular server platforms. You can mix and match whatever server hardware you've got lying around. With so many ISPs building their own FreeBSD and Linux servers, it's surprising that most of the software products run only on the major commercial platforms.

The software balancers use different approaches to spread the load around. Bright Tiger's (www.brighttiger.com) ClusterCATS product uses an approach based on HTTP redirects. The clients contact the cluster server and are redirected to the most available server. As you can imagine, all this redirecting comes at a price — more network bandwidth is consumed, but as long as the clients spend some time at your site, the extra overhead will fade into the background. ClusterCATS runs on NT and Solaris systems only, so other Unix users will have to wait.

Another software product aimed at NT users is Valance Research's (www.valence.com) Convoy. Convoy gives you an enhanced DNS server that keeps track of how your web servers are performing and only hands out the addresses of servers that are available to serve requests. It's a straightforward product that should serve the needs of less heavily loaded sites.

Do you really need to consider load balancing? Consider the magnitude of the problem. According to recent estimates, the Internet has doubled in size every year since 1993, and currently numbers about 60 million users. The number of e-mail users have doubled since 1994; the number of messages has tripled. Approximately 28,000 new commercial web sites are opened each month. In a recent article in the New York Times, Forrester Research projected that electronic commerce will grow from \$8 billion in 1997 to \$327 billion in 2002. This will put additional pressure on web hosters; businesses that might be willing to live with the possibility of losing hits will not tolerate losing orders.

Even a web site that normally operates at moderate volume can be overwhelmed as the result of a news article about the company's product, sales results, or management. And if a company's web site is listed on Yahoo's "Daily Picks," watch out.

Not only will using a load balancer increase your service reliability and performance, but it will also allow you to use smaller, less expensive servers.

There are a number of questions to consider when choosing a load balancing system. For example, how many simultaneous TCP connections will it accommodate? What protocols does it support? Is it scalable, allowing you to add servers as needed? What kind of security features does it offer? Can it withstand a SYN flood? Will it balance loads between local and remote sites?

You will also have to choose between a software package and a standalone product. Although at first glance the software products seem less expensive, don't forget that you'll also have to factor in the cost of the hardware (server) and operating system.

When one of our client's web sites was overrun as a result of news of a proposed merger, many would-be visitors were locked out. Feedback was quick and negative. Our technicians were called in to work with the client's ISP to prevent a recurrence of the problem.

After studying the alternatives, our people went with Coyote Point's Equalizer. One of the newest systems on the market, the Equalizer was released in 1997. The top-of-the-line model can handle up to 2 million simultaneous active connections per hour, or more than 40,000 requests per minute. Equalizer implements "virtual clusters," which are similar to virtual domains. ISPs furnishing host services to many domains can configure a virtual cluster for each, and add or remove servers as needed to deal with changes in demand and content. Equalizer's "kernel level" load balancer is an integral part of the operating system, so all the activity necessary to route packets to servers happens within the operating system. Servers can be brought down for maintenance without losing hits and connections, and new servers can be added at any time. Equalizer supports all standard TCP/IP based client server protocols, including HTTP, SSL, FTP, POP & IMAP, and SMTP. That should cover the needs of most ISPs. Prices range from around \$6,200 for the basic model to around \$14,500 for the top-of-the-line product.

Cisco Systems Inc. (www.cisco.com) LocalDirector is another a standalone product that will handle 70,000 simultaneous active connections and will protect against SYN flood. Cisco offers a variety of load balancing options, including least connections, weighted percentage, round robin, fastest, and maximum connections. At around \$32,000, it's the highest priced product on the market.

If you're looking at software, IBM Corp.'s (www.ibm.com) Interactive Network Dispatcher can support clustered servers on any platform implementing standard TCP/IP protocols. This is a version of the "load balancing router" type system except that you provide the hardware. It hooks into IBM's Load Leveler system for shops that are into IBM iron (it runs on mainframes, too). You can balance across remote sites, but you have to add an Interactive Network Dispatcher at each location. The server platform determines the number of simultaneous connections the product can support. Cost is about \$1,500 per server.

There are many other hardware and software products available, with a wide range of features and costs. You can check them out on the Internet, where you can also find answers to all your other load balancing questions. I did a quick search on "load balancing technology" using AltaVista and came up with almost 50,000 matches. Both general and product-specific information abound. And yes, I got several "operation timed out" messages while attempting to get to the reference sources (but none for the web sites of the products themselves, thank goodness!). And yes, I became irritated and moved quickly on to another site!

You don't lack for options. Check out all the available products to see which best meets your needs. And don't be put off by the price tag. Considering the amount of money you have invested in your ISP, the cost of load balancing technology is a small price to pay to protect that investment. ♦

Grace Butland is affiliated with Sanford Consulting, an Amenia, New York-based consulting firm specializing in the telecommunications industry.

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MOHTA PUSHING CERFNET INTO FUTURE AND PROFITABILITY

BY BILL McCARTHY

The Internet does turn the world upside down. At the ripe age of 32, Pushpendra Mohta is one of the Internet's sage veterans. He is a technical guru, business leader and networking philosopher, and the field marshal credited with keeping one of the founding companies of the commercial Internet profitable in the war of attrition known as Internet services.

In this war, many ISPs, especially on the backbone provider level feel they must sacrifice profitability for market share. While most other company's operating Internet backbones tend to show a market share growth as a sign of success, however, TCG CERFnet seems to have the best of both worlds.

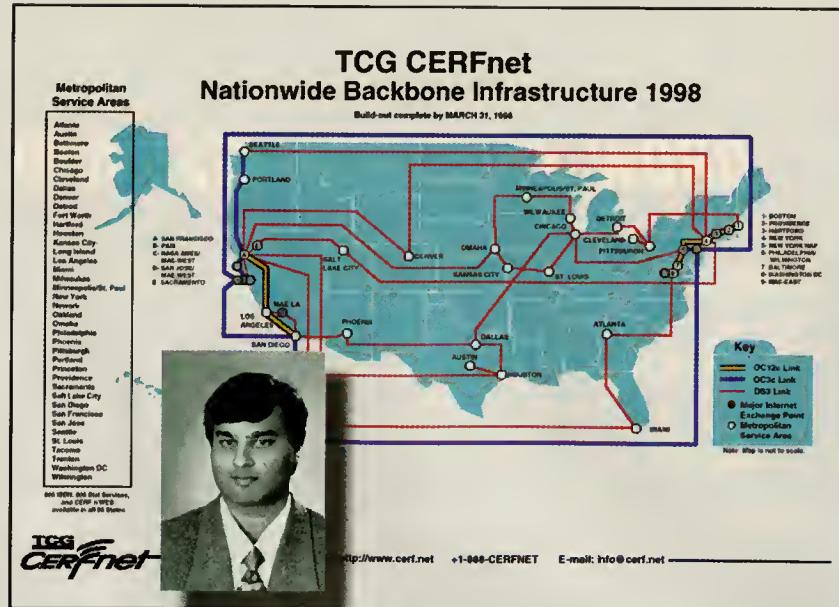
Internally, CerfNet folks call some of the pronouncements by the executive vice president *Pushisms* as he philosophizes about the future of the Internet and TCG CERFnet's role. In a telephone interview, Pushisms flowed like packets through a PortMaster 4, but there seems to be a central premise: For growth and profitability an ISP has to "own the wire and add value to it."

Push Mohta participated in setting up the Internet, and his philosophical observations about the Internet are, as philosophical statements should be, simple yet profound. But keeping it simple is a very complex process that involves staying on top of the technical, business and social issues surrounding the development of the Internet and anticipating the next generation of an industry that continuously reinvents itself.

Mohta envisions a world where there is "one digital pipe into your home or business." That pipe will deliver virtually all your communications needs. "It may bring 50 different things, all energized into your business or your home," he said. CERFNet is focused on the battle to be the company that supplies that digital pipe.

While national backbone operators all seem to focus on that goal, few claim to be making money. But, CERFnet grossed more than \$1.9 million on revenues of about \$10 million for the fiscal year prior to its acquisition by TCG. And CERFnet claims steady growth in profits and market share for more than six years.

Mohta realized that CERFnet had to go beyond providing Internet access, however, and its string of profitable years allowed it the opportunity to choose its buyer. After comparing several likely partners and getting five solid offers on the table, he and his team agreed that being acquired by Teleport Communications Group (TCG), the nation's largest provider of competitive local exchange services, offered both firms the



Pushpendra Mohta (inset photo) overlaid on TCG CERFnet national backbone chart. (Screen shots taken from CERFnet web site.)

greatest potential. TCG bought CERFnet from General Atomics in January 1997 for \$68 million in stock.

Telcos traditionally do not have the expertise to help firms integrate technologies or provide top-quality data services, he said, and ISPs do not have the live connection service expertise for voice. By becoming a part of TCG, CERFnet added more than 6,000 miles of fiber-optic bandwidth to the backbone and national connectivity with direct control of the key assets that have ISDN as well as ATM capabilities.

TCG's total revenues for 1997 were \$494.3 million, an increase of \$210.9 million or 74 percent from 1996. Internet revenues were added in February 1997 because of the CERFnet purchase. CERFnet immediately added 4.5 percent of total revenues, according to TCG's financial reports, and with bundled service opportunities, TCG expects it will play an increasingly significant role as communications demands increase.

Now AT&T Corp. is hoping to buy TCG for \$11.3 billion. Obviously, AT&T wants to be a player in local voice as it was so long ago, but CERFNet will also provide AT&T an Internet backbone network of greater capacity and reach than AT&T's own WorldNet network. It also offers eight technically advanced data centers for collocation and other web services. From CERFNet's point of view, Mohta said, AT&T offers the involvement of an IXC to extend the range of communications services and products it can offer and is the next logical step after the TCG acquisition.

From both CERFNet's perspective and that of AT&T, TCG's involvement with cable television companies may also prove to be a future enhancement. Three of the nation's largest cable television companies, Cox Communications, Inc., Tele-Communications, Inc., and Comcast Corporation own about 79 percent of TCG. TCG also has service agreements with the @Work business services division of @Home. @Work uses TCG fiber to access business customers and connect those customers to @Home's residential cable modem networks for telecommuting and other services. TCG also is committed to provide wholesale-switched services to cable - a transport option for either switched or IP cable telephony services.

Still, no matter what the future considerations, on the technical level the biggest issue is scaling. "It still comes down to

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bandwidth and switching. Do you have capacity?" Mohta said. Network management must be sure with each decision about network architecture that it can scale in users and applications because demands not only grow but often change.

TCG CERFnet has been increasing the bandwidth of its backbone by more than 100 percent every year to maintain a sustained utilization rate of about 50 percent. The company claims its backbone has one of the highest network availability ratings in the industry. And that's another part of the equation; being able to guarantee service, Mohta said. Customers are looking for the most stable infrastructure, and guarantees of stability. Mohta said CERFnet successfully guaranteed performance reliability of 99.45 percent for the past three years and has achieved uptime performance of 99.8 percent, including both scheduled and unscheduled downtime.

The company still must anticipate. CERFnet announced March 10 that it initiated another major upgrade program that includes nationwide implementation of OC-12c (622 Mbps) technology. With OC-12c, the traffic handling capability of CERFnet's backbone will increase by a factor of four, starting in California and the Northeast corridor, and expanding to the rest of the network from there.

But as the upgrades proceed, companies have to look at costs and market segments that are viable for the long run rather than the hottest technology to gain attention. A key component, Mohta said, is having "prudent technologists" - people who can evaluate the long-term risks and rewards of particular technologies. The provisioning and deployment of that technology, its integration and its future possibilities all are factors. While all ISPs may "buy and use the same ingredients. Some people have the recipe," he said.

Mohta has been developing Net recipes for a long time in this dimension where time is measured in nanoseconds. In 1989, while working on his doctorate in computer technology at the University of California, San Diego, Push Mohta decided he needed some industry experience. CERFnet was a project of the San Diego Supercomputer Center with a grant from the National Science Foundation in 1989 and became one of the original members of the National Science Foundation Network (NSFNet). He took a summer job to help establish the West Coast segment of NSFNet. Instead of returning to school, Mohta stayed with CERFNet, one of the three founding members of the Commercial Internet Exchange (CIX). Mohta helped design an implementation and routing strategy for CIX and its integration with the NSFNet.

Mohta went on to design and implement CERFnet's fast-packet deployment as the NSFNet was replaced by the commercial Internet. Mohta also established Internet infrastructures in more than a dozen countries including Brazil, Fiji, India, Korea, Mexico, United Arab Emirates and Venezuela. And Mohta continues to be active on a variety of international Internet standards and program committees, including the Internet Engineering Task Force (IETF).

In 1989, no one really knew where NSFNet would lead. "In 1991 people began to say, 'This is just too good for just academics,'" Mohta said. But most people still did not appreciate the potential. In 1993 and 1994, CERFnet was an early participant in the BGP4/CIDR TestNet to enhance routing and overcome an explosion in domains and users, but most businesses still showed limited interest. But in 1995 web hosting started maturing; "it showed a clear value add to the base of IP access." Businesses began to take seriously the idea that the Internet could spawn any number of value added services.

Since the company consistently sought out and tested leading-edge Internet technologies like SMDS, ISDN, ATM, Unix/NT Web hosting, to stay ahead of business customer needs, the company was ready. CERFNet began deploying serious web farm technologies.

Both TCG and TCG CERFNet continue to act as beta sites for new technologies, including IP telephony, voice-over-ATM, IP-over-SONET, Asymmetric Digital Subscriber Line and multi-gigabit wide-area routing.

But that is where the proper evaluations come in, and a careful eye on the technical and business developments of what is hot now helps prepare for the future. For example, there continues to be a challenge for deploying DSL because of the different flavors that are available. HDSL does not talk to ADSL, and RADSL cannot talk to SDSL. Even within a given technology, suppliers develop differences that are not interoperable. While Universal ADSL should eventually be universal, hardware costs and standards continue to be obstacles for widespread implementation. In some ways, it is a similar problem that has faced the widespread deployment of ISDN, he said. "CERFNet does not announce a product just to say we have it; that isn't viable. It must be a sustainable business." But CERFnet is conducting DSL tests in New York and New Jersey to see how problems can be solved.

Voice over IP is also hot. While voice over IP continues to improve, sending calls across the Internet still isn't as good as the voice analog phone services, Mohta said. Sound quality is marginal, and there are delays in transmission. Voice over IP is still limited to phone-to-phone service. On the business side, the telcos are offering very low prices, especially for large businesses, to maintain and extend their market base.

At the moment, the low cost of IP telephony is the only benefit that appears to make sense to most people. But Mohta has a little different view. The long-term value is not really lower-cost in use of IP, Mohta said, but value-added services through a convergence of voice and data networks and providing sophisticated integrated applications. Along with the economic considerations a major reason for moving to IP telephony will likely be consolidation of all of an organization's voice, data and Internet traffic. The key to the success of voice over IP will be unified messaging - voicemail, e-mail and fax.

VPNs are another hot product but with similar implementation problems because customers want flexible services and a scalable reach for their VPNs, but with security. VPNs must protect resources and privacy, and securely connect only those who should be connected. CERFNet recently rolled out its new VPN products, which Mohta said addresses those concerns.

Increasingly, buyers want to deal with a single source so voice and data are converging at the transport and access levels. They demand economic bandwidth that scales transparently, and they may not even know that they want these things, but ISPs must be prepared. This is the trend that brought CERFNet to TCG. Mohta believes that ISPs will find themselves competing with phone companies to offer integrated services, and it's better to be part of a telco than to take them all on in their turf while attempting to protect yours. Both players are chasing a rapidly expanding base of business customers who have gone beyond simple Internet applications. The battle is focused around "a single digital pipe." ♦



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Internet 101: Packets, Routers, LANs and WANs	688-212
Internet 201 - Clients, Servers, and Other Delights	688-242
Internet Telephony - Third Wave of Telecommunications	688-222
Internet Telephony with Andy O'Brian	688-053
Internet Telephony with Scott Wharton	688-180
IP Multicast and your Future	688-125
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IP Telephony Panel	688-251
IP Telephony: Backbone vs. Gateway Provisions	688-047
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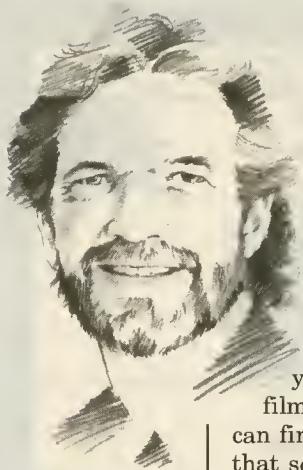
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Ric Manning is a columnist and web master for *The Courier-Journal* in Louisville, Kentucky. His weekly column covers computers, consumer electronics and the Internet and is distributed to more than 100 newspapers by the Gannett News Service. It's also available on the World Wide Web at <http://courier-journal.com/gizweb>.

Ric was the founding editor of *Plumb* and *Bulletin Board Systems*, two newsletters that covered the BBS arena in the early 1980s. His freelance work has appeared in several magazines including *PC/Computing*, *Mobile Office*, *PC Week* and *Home Office Computing*.

Ric lives in Southern Indiana with his wife, two children and two Weimaraner dogs.

MANNING THE WIRES

by Ric Manning

RECORDING INDUSTRY TARGETS PIRATED MUSIC WEB SITES

The hit soundtrack CD from the movie *Titanic* will cost you \$15 or more if you buy it in a music or department store. But if you just want to hear Celine Dion sing the film's theme song, "My Heart Will Go On," you can find it on the Web for free in a digital version that sounds every bit as good as the track on the CD. You just need to know where to look.

The version on the Internet uses an audio-compression technique called MPEG-2 Audio Layer-3, better known as MP3. The compression offers a 12:1 ratio and can squeeze a 4 1/2-minute song into a little over 4 MB. With a fast modem, it can be on your hard drive in about 12 minutes with no sales clerks or credit cards to mess with.

All you need to hear the music is a shareware player like Winamp (<http://www.winamp.com>) or MacAmp. There are even utilities like WinDAC that will extract the digital audio stream from PC-based CD players.

All this might sound like a dream deal to you and me, but it is quickly turning into a nightmare to the copyright-obsessed music industry. Until now, digitized music online, and on hard drives, was only a mild threat. Digitized files were either too big to be transportable or the compression schemes robbed the music of its fidelity and made the digital versions poor competition for the real thing.

But not any more. With MP3 recordings small enough to archive in large numbers, the Web is suddenly crawling with pirated music. Songs by Prodigy, Verve, Marilyn Manson, the Cure, the Chemical Brothers and a myriad of alternative and metal bands are plentiful.

Even old stuff by Dylan, Springsteen, the Beatles and the Eagles are squirreled away in nameless web servers, many of them on college campuses or outside the United States.

TAKIN' CARE OF BUSINESS

Earlier this year the Recording Industry Association of America (RIAA) stepped up its attack on the pirate sites. The organization went to the courts to get preliminary injunctions against three MP3 sites. The suits were settled after the site operators promised to stop posting copyrighted recordings.

The RIAA also began working closer with the FBI, U.S. Customs, the U.S. Postal Service and the Secret

Service and a number of sites closed down. One site announced on its front page that it had removed links to MP3 archive sites because a friend of the web master had been threatened with a lawsuit. A site listed on Yahoo! that offered songs by the Dave Matthews Band posted this notice in April: "We're closed. Probably not coming back."



Logo on RIAA's anti-piracy web page

"We will not tolerate unauthorized reproduction and distribution of recorded music on the Internet," said Hilary Rosen, president of the RIAA, in an interview with the *Cleveland Plain-Dealer*. "Whether or not for commercial profit, these music archive sites hurt artists, record companies, musicians and everyone else involved in the creative process who depend on royalties to earn a living."

This spring, the recording industry launched an educational campaign aimed at stopping college students. The effort included the launch of an RIAA site (<http://www.soundbyting.com>) that attempts to explain the piracy problem and convince students that it is legally and ethically wrong to traffic in copyrighted songs.

The RIAA's web site includes details on federal copyright laws, which contain penalties of up to five years in prison and a \$250,000 fine — even in cases in which music is distributed without profit.

One MP3 distribution site includes a notice that is typical of many of the sites:

"Disclaimer- DO NOT download these unless you own the song or else someone will get a warrant for your arrest because they know that you have downloaded it even though this server is anonymous!! It is illegal to download full songs if you do not own them."

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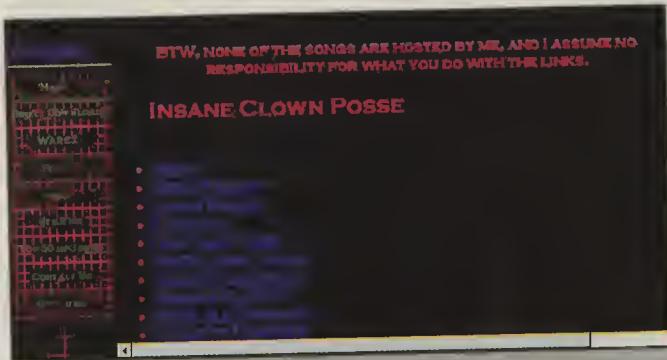
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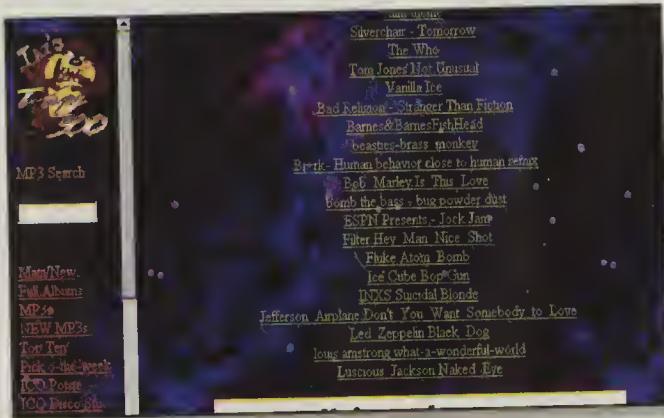
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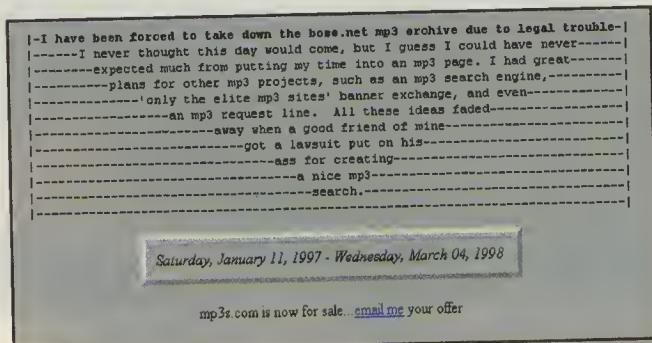
Sample MP3 archive sites



Sample MP3 archive sites

But, the next line says: "HAHA, sorry something just made me laugh."

According to the Soundbyting site, "Uploading and downloading somebody else's music without their permission isn't just against the law, it's a rip-off. Simple as that."



Notice posted on site that removed MP3 links

Under a section titled "Who We Aren't," the RIAA says "We aren't the FBI. We aren't the CIA. We're not the police. In fact, we're not in any way connected with any government agency of any kind. No matter what Scully and Mulder say. Really."

ROCK 'N' ROLL AIN'T NOISE POLLUTION

"We also aren't against using the World Wide Web to distribute music online. Exactly the opposite. We know the Internet will be a key part of the music industry's future. So we're all for the hardware and software that will make even more music available online, but doing it in a way that respects the rights of

artists. . . . What we are trying to do is protect an idea: that musicians and labels should be allowed to control the products of their own creativity and hard work."

Another section contains a list of "Top Ten Myths about MP3," (see sidebar), including the rationalization that distributing copyrighted music for free is really just free promotion for the artist. The reply quotes ClariNet founder Brad Templeton's "Ten Big Myths About Copyright."

"It's up to the owner to decide if they want the free ads or not. If they want them, they will be sure to contact you. Don't rationalize whether it hurts the owner or not, ask them. Usually that's not too hard to do. Time past, ClariNet published the very funny Dave Barry column to a large and appreciative Usenet audience for a fee, but some person didn't ask, and forwarded it to a mailing list, got caught, and the newspaper chain that employs Dave Barry pulled the column from the Net, pissing off everybody who enjoyed it."

Even as it battles the pirates, the music industry itself is looking at using MP3 as a legitimate distribution method. A start-up company called Universal Digital Media (<http://www.udmedia.com>) is one of several that hopes to work with record companies to get the rights to legally distribute commercial songs on the Web.

It's not likely that such schemes will deter the bootleggers any time soon. "High bandwidth is cheap," said Jean-Paul Davidson, who runs an MP3 site in Canada. "Give people that and **** gonna happen. Supply and demand. There are new demands not being met, and money will be made meeting them." ♦

HERE ARE THE TOP TEN MP3 MYTHS FROM THE RECORDING INDUSTRY ASSOCIATION OF AMERICA'S NEW ANTI-PIRACY WEB SITE:

10. Record companies just don't get it!
9. If a Web site doesn't display a copyright notice for the music, the music isn't copyrighted and it's okay to download.
8. An MP3 site is legal as long as you put a disclaimer on it.
7. MP3 sites hosting sound recordings are legal if the server is physically outside the U.S., because U.S. copyright law does not apply.
6. The "fair use" exemption or the "First Amendment" protects me.
5. If I upload or download a sound recording and leave it on my drive for less than 24 hours, then I am not liable for copyright infringement.
4. If I just download sound recordings, it's not a violation.
3. If I upload music from a CD that I own, I'm not violating copyright law.
2. If I don't charge people for downloading music from my site, it's not a violation of the law.
1. Uploading music on the Internet doesn't hurt anybody. In fact, it's promotional and free advertising.

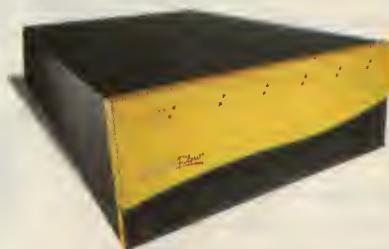
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AN INTERESTING EXPERIMENT

Steve Stroh's first exposures to wireless data and networking resulted from experiences with Amateur Packet Radio (callsign N8GNJ), and later TCP/IP on Amateur Packet Radio using Phil Karn KA9Q's NET and NOS implementations of TCP/IP for DOS PCs.

Steve is active in TAPR-Tucson Amateur Packet Radio (<http://www.tapr.org>) and is a founding-member and a member-at-large of the Puget Sound Amateur Radio TCP/IP Group

(<http://www.strohpub.com/psartg>). Professionally, Steve is a system administrator. Steve maintains a web page related to his columns at <http://www.strohpub.com/boardwatch>. Steve runs a mailing list to discuss wireless data and networking. To subscribe, send an e-mail to: majordomo@mail.inglist.net, and in the body of the message (no subject needed) put: subscribe wireless-data.

Steve lives in Woodinville, Washington, with his wife Tina and daughter Merideth. He can be reached via e-mail at <mailto://steve@strohpub.com>.

The Puget Sound Amateur Radio TCP/IP Group meets monthly, and has for a number of years. The usual topic of conversation is the Puget Sound Amateur Radio TCP/IP Network (PSARTN), which we've built up over the years, consisting of low speed digital repeaters, simplex, half-duplex lower-speed LANs, servers, gateways, routers, end user stations, and of course, an Internet gateway. The common denominator of the PSARTN, is all of the component systems use TCP/IP, which is still considered pretty exotic in Amateur Radio.

So, it's no surprise that a number of Seattle-area Amateur Radio operators have become users of the Metricom Ricochet wireless Internet access system in the Seattle area. At a meeting a few months ago, we noticed that more than a few showed up with laptops equipped with Ricochet modems. That set the stage for an interesting experiment. We encouraged anyone who had a laptop equipped with a 10baseT port, and configured with TCP/IP, to bring it to the next meeting.

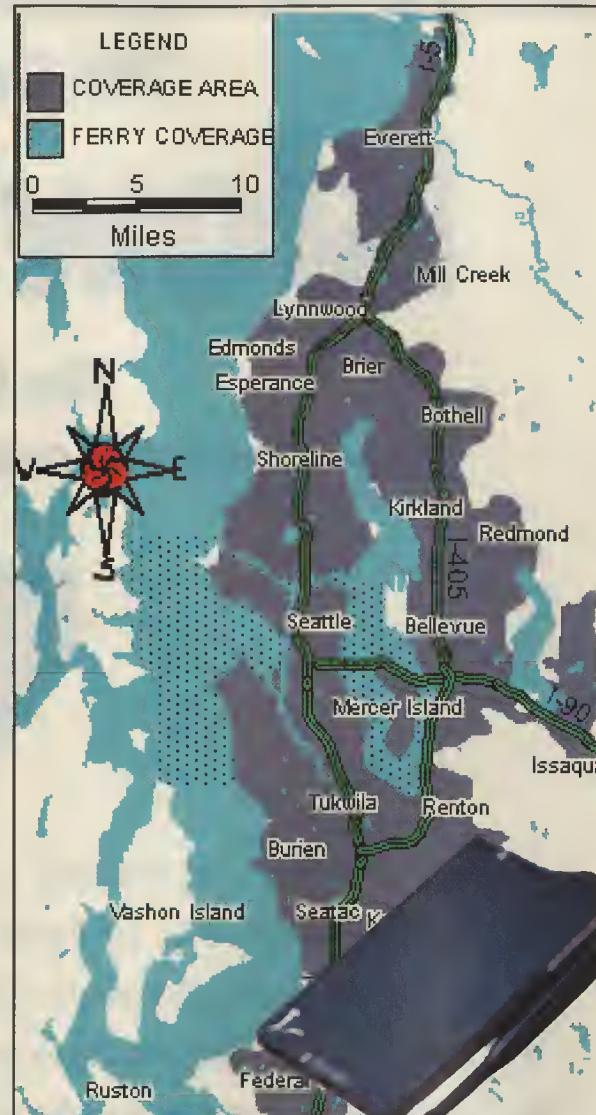
THE EXPERIMENT

(This discussion builds on previous "Wireless Data Developments" columns, so I won't go into detailed explanations of all items discussed here.) A pal, David Flood, and I brought enough equipment between us to provide a 10baseT Ethernet port for all the attendees expected to bring a laptop. I provided my Ramp Networks WebRamp M3 dial-on-demand router and my Ricochet modem. Two other Ricochet modems were present, and were connected to the M3.

The combination worked better than I had hoped. The three Ricochet modems connected and amazingly, did not interfere with each other. The M3 handled Internet traffic for approximately 10 users, and acted as a DHCP Server. Here are some specific points of admiration and amazement.

There were three Ricochet modems all apparently operating normally within a few feet of each other. The group was pretty impressed when this became evident. Resistance to interference is a key characteristic of spread spectrum radio systems, and this was the first time that any of us had witnessed it firsthand.

The M3 worked very well with a number of users connected to it. It automatically allocated DHCP IP addresses to all the laptops. The Ricochet modems have distinctive audio signals when they are brought online, and it was interesting to watch the M3 make use of the second and third Ricochet modems as needed.



The Seattle Ricochet Internet System and a Ricochet wireless modem

The overall throughput for each of the users was considered acceptable by all in attendance. We had a good mix of simple HTTP browsing, several FTP's going, and even some CUSeeMe videoconferencing. It would have improved even more had I better tweaked the M3's parameters that specified when to make use of the second and third modems.

All the equipment actually ran on direct current (DC) and theoretically could have been run on batteries. If we wanted to make it more realistic, we could have run all the equipment with AC adapters from one

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It wouldn't take much to make this combination of equipment good enough for use in real events, where Internet access would be a great asset, but using phone lines would be a nuisance or simply unavailable.

POWER PROBLEMS AND BATTERY BACKUP

Power is one problem, but there are a number of inverter/battery/charger combinations available. Richard Perez of *Home Power Magazine* (www.homepower.com) studied the problem of using multiple DC devices with different voltage requirements in depth. Richard concluded that the best tradeoff between cost efficiency and electrical efficiency was to simply use the AC to DC adapters that came with systems, and power them all from a single DC to AC inverter. The DC to the inverter was supplied by a small "gel cell" battery, which in turn could be charged by 12 volts from a car's alternator, AC power, or a small solar panel.

The second problem is that the Ricochet system isn't "hardened" for use in emergencies by having battery backup available at the poletop units. However, the WebRamp M3 works with any PPP "modem-like" device (basically, an RS-232 serial port and the ability to respond to an "AT" command string). Any number of wireless modems meet this criterion, so an ISP could set up their own wireless links.

The basic point is that to provide Internet access to an emergency area, it's only necessary to provide a link to the edge of the emergency zone, where there will almost always be Internet access of some kind available.

AMERICAN TELECASTING LAUNCHES WIRELESS INTERNET ACCESS IN DENVER

American Telecasting, Inc. has begun providing wireless Internet access in the Denver, Colorado, area. At the moment, wireless Internet broadcasting might be a better description of ATI's service. Like WarpDrive Networks (see the November 1997 "Wireless Data Developments" column), ATI's WantWeb (www.wantweb.net) service is one-way, Internet "broadcasting" in the MMDS, MDS, and ITFS spectrum that's normally used for "wireless cable." Pricing begins at \$69.95 per month for consumers. The data rate for WantWeb is approximately 750 Kbps. ATI has announced plans for providing WantWeb service in the Portland, Oregon, and Seattle, Washington, areas by July 1998.

WAVERIDER COMMUNICATIONS TO DEBUT WIRELESS INTERNET ACCESS

For several months, WaveRider Communications, Inc. (www.waverider.com) of Vancouver, British Columbia, has "kept me informed" of their soon to debut wireless Internet access system, and they'd like ISPs to know about it (short of actually advertising in *Boardwatch*, apparently). I've refrained from writing about WaveRider in the past because I wasn't too impressed by the information they provided on their web site (including having only a drawing of their units, not a picture of an actual unit). WaveRider claims its system is specifically designed for use by ISPs. I hope to visit WaveRider in Vancouver this summer and if that happens, I'll be able to report more about their system.

DO-IT-YOURSELF DEPARTMENT (WHO NEEDS AN ISP?)

Earl J. Green, a subscriber to the Wireless-Data mailing list posted an interesting article about "Neighborhood Network" (trademarked!). Basically, a neighborhood gets together to find 15 or so potential users. Preferably, they're all within a block (no streets to cross) and Internet T-1 hub equipment is located at one of the houses and the distribution is accomplished by stringing Ethernet cable on fences, etc. By spreading the costs among a group, each household has Internet access at T-1 speed. When it is necessary to jump a street, wireless data equipment is used. To me, the most interesting part of this idea is that the company, Anderson Research (www.purscience.com), claims to offer detailed information on how to accomplish this to anyone who is interested.

A FOOTNOTE

In early 1998, WarpDrive Networks went out of business, with little warning, after its investors withdrew financial support. A reader chastised me of "hyping" WarpDrive, and consequently looking foolish when they went out of business. When writing about companies and their products in this column, I try to describe what I find interesting and noteworthy. I'm simply not able to do in-depth research on companies whose products I write about. In the example of WarpDrive Networks, I found their technology noteworthy, and re-reading the column as published, I don't think I wrote anything misleading, other than perhaps being over-enthusiastic about the demand for WarpDrive Networks' service.♦

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TRANSEND



MARKETING 101 for ISPs

by Michael Greenbaum

BRANDING YOUR INTERNET SERVICES FOR A COMPETITIVE EDGE

America Online . . . America On Hold. Yes, AOL is a joke to power surfers, and yes, its service stumbled badly. But in spite of serious product failures that could have killed a company with a weaker brand, few of its core market of technically unsophisticated consumers gave up on it, and it is now recognized as a brand with broad power. That is largely because people feel AOL will not intimidate them.

CompuServe. Erols. UUNET. BBN. Get the picture? Every one of those ISPs has a well-defined brand image that probably just came to your mind. CompuServe: solid content for serious users. Erols: low price. UUNET: industrial-strength. BBN: technology leadership.

ISPs can learn from these brands, and from world-class branding experts like IBM, HP, Apple, Rolls-Royce, BMW, and Nike, to maximize the power of their brands. Obviously, those companies spend sizable marketing budgets to establish their brands, but even small ISPs can apply the key lessons. Branding is more a matter of thinking and discipline than of spending.

WHY BRAND?

Why should you bother?

Commoditization.

Branding is one of your most powerful defenses against this deadly threat.

First, what exactly is a brand? You deliver services (or products) and you name them with trademarks or brand names. But the brand itself is in the mind of the customer. The brand is the attributes and benefits the customers ascribe to your service that goes beyond the commodity value of the service you deliver.

- A service is what you sell; a brand is what customers buy.
- A service can be copied; a brand is unique.
- A service has a life cycle; a brand is timeless.
- A service is taken at face value; a brand evokes a strong reaction.

Branding can occur at multiple levels. You can brand your company (like Apple) and you can brand individual products and services (like Powerbook or Newton).

Born marketers will immediately see the core element here: getting territory in the mind of the customer is reason enough to pursue branding. But for the more concrete thinkers, consider these reasons to build brands:

Commanding the highest possible price. You can build perceived value in commodity markets and justify price premiums.

Withstanding challenges. A good brand can carry you past major threats by competitors or circumstantial threats (like AOL's over-expansion). This is a key point. Products and services are highly volatile and cyclic in comparison to your competitor's, and sometimes lag. But a good brand is resilient to such temporary circumstances. It dips only slightly, and buys you time to recover with minimal losses.

Influencing customers. By building a brand, you build loyalty, and become a favored provider. A brand wins customers over competitors with equal quality but weaker branding.

Getting self-selected customers. One of the most powerful benefits of branding is it saves you the trouble of finding customers, by helping them find you. And these are not just any customers, but the best kind: customers who value your strong suits.

If you build a good brand and deliver what it promises, it becomes a tool to attract the kind of customers who will keep on coming back to you.

Fueling expansion. A good brand gives new services a pedigree. It also attracts investment and influences the influencers.

Building equity. Brand equity is recognized as real value, and can even be translated into dollars. Take operating income, and subtract the commodity value of your services, and the remainder is the income attributable to your brand. What do you think the Coca-Cola brand is worth? Some have estimated it at \$45 billion.

Branding of services is a relatively new area, and more subtle than branding of products. For ISPs, the reason to bother with this subtlety is clear. The threat of commoditization gives ISPs a strong reason to embrace branding. When value is hard to evaluate, the only remaining basis for comparison is price. Branding could be one of the few, and in the long run most economical, ways you have to rise above the crippling effects of price-driven competition.

So, if we agree that a strong brand is a good thing, what are the steps to take to build one?

STRATEGY AND TACTICS

Understand the target. The target of branding is the mind of the prospect or customer. In general, customers evaluate brands in terms of the following:

- Quality/Performance: How well does it do the job?

Michael Greenbaum is vice president of sales and marketing at AppliedTheory. He previously held senior management positions in the software, Internet, online services and hardware industries. At Borland International he was vice president of marketing responsible for all marketing and public relations functions including the annual user's conference.

As a vice president at Bell Atlantic Internet, he was responsible for that company's strategy to develop an Internet presence and later to be an Internet service provider in its service area. Prior to that, he was general manager of Prodigy Services Co., the pioneering online service and was instrumental in applying the ease-of-use characteristics of the consumer to business applications. His business experience began in sales, marketing and business development with IBM.

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Determine your customers and their needs. Consider doing surveys or focus groups to test and refine your understanding.

Identify the core equity of your brand. Think about who you are and what you offer. Step back and search among these areas:

Company attributes. What do you do, how do you do it? In a services business, the most important question is; who are you? Mercedes-Benz is known for engineering; Craftsman for durability; Waterford for handcrafting.

Core category equities. What are the basic deliverables that customers expect from the industry? Microsoft and IBM are comprehensive and low-risk. HP is rock-solid. Sprint delivers clear sound.

Consumer benefits. What specific gains do customers get out of the product or service? Macintosh offers ease and productivity. Volvo and Tylenol offer safety. Remember to think in terms of benefits (what value they get), not features (how they get it).

Consumer attitude. What are the emotional and psychological dimensions, beyond the tangible benefits? Now Macintosh offers the cachet of "think different" (we have yet to see if that sells). Marlboro offers manliness. Hallmark offers caring.

Answering these questions is the first step to building your company's brand. They are simple questions, but ones that deserve a great deal of thought if you are going to harness the power of branding.

SUPPORT YOUR BRAND

Support the brand broadly. A brand only develops if you build it. Advertising is one way to do that, but the task runs much wider and deeper.

Apply branding throughout your product development and operations. In your development focus, features-selection, and functionality. In your positioning and promotion. In your quality of service, and in your support style.

Be a zealot about maintaining a constant and consistent brand image in all your communications. In your product and brand advertising. In your public relations. In your trade show presence and your collateral. In your employee programs.

Don't forget branding consistency in your informal "customer touch points." Look beyond advertising and promotional materials. Every time a customer interacts with the company, that interaction creates a perception that either reinforces or counters the brand perception. What does the bill look like? Is it accurate? How are the phones answered? What do the offices look like? How are customer inquiries or complaints handled? How do the technical people act and sound? Etcetera. If an ISP is selling "quality," then every aspect of the business needs to scream first class. If it is selling reliability, orderliness must be everywhere.

Keep all aspects of your web site "on message." Maintain consistency with your brand in look, feel and context as well as content. Somehow, many firms forget that and get enamored by the capabilities of the Web, thereby abandoning or tainting their brand image.

Sustain your brand effort over time. Brands are built over time, by constant repetition and suggestion of a simple message. Even with massive advertising it is difficult to build a brand overnight. You must be relentless and consistent.

Monitor and track brand equity and impact on an ongoing basis. Check that you are on message, and that your target has not shifted. Verify that the message is being received as intended.

Be on the lookout for brand-building priorities and mistakes. IBM has powerfully recaptured mind share with its e-business initiative. Intel lost a lot of ground with its mis-handling of the Pentium bug.

Be creative. Legend has it that when an early Rolls-Royce customer asked for his repair bill, sometime after a company man had been rushed out to replace a broken axle, he was told "there must be some mistake, sir...Rolls-Royces do not break down."

Focus on your people. To a large extent, when you brand a service, you are branding your people. Your people are your product. Shape a brand your people can embody. Then make sure your people understand it and sustain it. Their "service mentality" is your real competitive edge.

Some of the issues surrounding branding, and some first steps to take to develop your brand, are covered in this column, but this is not a five-minute task. It takes a lot of strategic thought and business insight. It's an effort; but one that will pay back huge dividends in strength, stability, growth and long-term profitability. ♦

useful resources for more information

The following web sites offer valuable information and additional links:

- BrandBuilding.com, is a consultant-sponsored site with some good tutorials on the building of healthy, profitable product, service, and corporate brands. www.brand_building.com
- New Media magazine focuses on online branding in an interesting article, "Energize Your Brand" (6/2/97). http://newmedia.com/NewMedia/97/07/fea/Energize_Your_Brand.html
- Solutions Integrator magazine has a brief article on "Branding Your Service Product" (1/15/98) that is specific to the computer services business. www.solutionsintegrator.com
- "Branding Applications" is a thought-provoking article on deeper aspects of branding in the interactive world. It's on the Poppe Tyson web site. www.poppe.com/pti/pc/brand.html
- Advertising Age offers an online Branding Forum, where marketing pros discuss brand strategy and branding issues in the new-media age. <http://adage.com/interactions/branding>
- SmallbizNet includes a library of nearly 4,000 indexed and abstracted documents and book chapters, with extensive sections on marketing items from publishers, government agencies, and universities. Many are free online, some as abstract-only teasers. "How To Develop Marketing Perspective," Doc #6429, addresses branding and positioning. www.lowe.org/smbiznet/index.htm

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ISP\$ MARKET REPORT

Paul Stapleton

TAKE-OR-PAY CONTRACTS ONLY AN INTERIM SOLUTION: “SPOT” BANDWIDTH ONLY A MATTER OF TIME

A decade from now, the CFO of a super-regional communications service provider, that started out as the area's largest ISP, will pour a cup of coffee in the morning and sit down in front of his computer screen to make some interesting choices.

The marketing report he read the previous night will have told him three of his largest customers will be requiring additional TCP/IP and ATM based bandwidth within three months, as they begin to launch new net-centric products. The operations report will have told him his existing network capacity will not be able to meet the new demand.

But despite marketing's sincere, if overly optimistic, belief that this will be an ongoing network demand, our CFO has his doubts. He has seen the earlier operations reports showing how these new product initiatives push data bursts into the network but often do not last. On the Net these days, new products are constantly coming online. And constantly disappearing.

Our CFO decides to play it safe and buy the network capacity he needs on a short-term basis. He will buy spot. A quick look at the screen tells him the Communications Commodity Network (CCN) sells a three month forward, six month term contract that should meet 80 percent of his incremental capacity needs.

The screen reads MCI WorldCom, AT&T Teleport, and Qwest-Stapleton Inc. are offering to sell OC-3 for delivery at the Chicago hub.

He smiles. A decade of fanatic fiber deployment and deregulation has made the pricing quite competitive. He buys from Qwest-Stapleton, a quality supplier.

However, we are not there, yet (rumors of the Qwest-Stapleton merger notwithstanding).

TAKE-OR-PAY CONTRACTS OF THE PAST

Today, in the communications business (a \$350 billion commodity flow market), we have the equivalent of the old gas transmission “take-or-pay” contracts of a decade ago. Gas transmission companies entered into long-term contracts to ensure they had a steady supply of gas for their customers. Besides, why not lock in a good price? Energy prices (another \$350 billion commodity flow market) were constantly on the rise. A contract helped one plan. This probably sounds familiar to some ISPs.

Then came the proverbial “paradigm shift,” only consultants had not yet thought up that term. Basically, deregulation and a decline in world energy prices completely changed the game.

In the 1980s gas prices dropped dramatically. Gas transmission companies now had long-term obligations to buy for a higher price from suppliers than they could charge in the open market. Defaults, abandonment, and bankruptcies left and right.

The bank I worked for spent a lot of time trying to collect moneys owed. I got a heck of an education.

Most telecommunications contracts today are “take or pay contracts”. You must pay for the bandwidth you contract for under this style agreement, whether you use the services or not. That begs two questions. Which way are telco transmission prices going? What is happening with deregulation? Take-or-pay contracts are everywhere.

When a reseller buys long distance minutes from AT&T, the contract often says you pay no matter what you sell. That is essentially how Touch Tone America (OTC BB:TONE) got into financial difficulties.

When an ISP sells T-1 access and the buyer uses 20 percent at peak capacity, the customer still pays for the full T-1. This may sound familiar too.

When UUNET or PSINet lease POPs, those agreements have take-or-pay features. (I know, you all signed agreements saying you can't admit it.)

When Qwest or IXC sell fiber access as IRUs, in exchange for ISP's equity, that is take or pay.

ACCOUNTING FOR THE TAKE-OR-PAY CONTRACT

As an aside, today, most independent ISPs are not accounting for these agreements properly. Signing one of these agreements creates an asset and liability accounting journal entry that needs to show up on your balance sheet.

Proper accounting calls for a calculation of the net present value of the agreement and the posting of an asset and a liability (divided between current and long term) in that amount on the balance sheet. It is the same as investing in PP&E to move traffic over

After bouncing back and forth between finance, publishing and the Internet, Paul Stapleton has landed squarely in the middle. He is Managing Director of Stapleton & Associates, an Internet focused financial consulting firm. Clients include major players as well as start ups and middle market companies in media, telecomm and software.

Paul Stapleton is also editor of *ISP Report* (to subscribe, e-mail ispreport@mediabiz.com or call 303-271-9960 or fax 303-271-9965; annual rate is \$195; sample issue sent on request) the newsletter of record for financial activity in the ISP industry. Paul welcomes comments and suggestions at paulstapes@aol.com. He lives in Boulder, Colorado with his lovely new bride.



All ISP customers take the same ride. Some just enjoy it more.

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Where the Web gets personal.

your network. And it "depreciates" as it is used and paid for (or not used for that matter).

Continuing with my catastrophe scenario above, if the price of network access falls too fast and it becomes cheaper to buy network access somewhere else, you must write-off the value of the contract and take a hit to earnings.

TELECOM AS A COMMODITIES MARKET

The screenshot shows the Microsoft Internet Explorer browser window displaying the RateXchange website. The title bar says "RateXchange Microsoft Internet Explorer". The main content area has a purple header with the "RateXchange" logo. Below it, a section titled "MINUTES" lists "Browse", "Offer", and "Bid" options. Another section titled "BANDWIDTH" lists "Browse", "Offer", "Bid", "Register", "News", "Spotrates", "Service Grades", "About Us", and "Contact". The main text area says "For the week of April 12, 1998" and describes RateXchange as an efficient marketplace for sellers and buyers of wholesale international telecommunications. It explains that users can place offers and bids for minutes or bandwidth, and sellers can accept offers or bids for desired capacity. A commission is payable to RateXchange. There is a "CONTACT" button and contact information including email (Info@RateXchange.com), phone (415.550.2600), fax (415.550.2488), and address (1258 Valencia Street, San Francisco, CA 94110). A note at the bottom states the site was created by Mark Somer Productions. The status bar at the bottom shows the URL "http://www.ratexchange.com" and the time "12:59 PM".

RateXchange web site — For "sellers and buyers of wholesale international telecommunications"

Here is the good news. Take or pay agreements are a natural, but temporary stage in an industry's development. Pricing in the gas industry is now driven by a commodities market. Telecom will get there too. And while a market in which prices

change everyday may sound more scary and volatile, it is actually a better way to manage and hedge risk.

I have already seen three announcements by web sites saying they intend to build the telecom commodity exchange of the future. Below I list two. They at least have something of a web site running. The other hasn't started yet and I hate sending readers into vaporspace.

I refuse to hand over the trophy to modern day bandits who assemble a team, throw up a web page, secure venture financing, issue a press release and declare victory months, even up to a year, before a product or service is launched. My esteemed journalistic colleagues fan the fire by not asking to see, feel and touch the product.

RateXchange (www.ratexchange.com) is trying to "create an efficient marketplace for sellers and buyers of wholesale international telecommunications. It was founded by Sean Whelan a former executive at Sprint, MFS Communications, and WorldCom.

Also look at London based Band-X (www.band-x.com). They are "an independent virtual market for trading international wholesale telecom capacity, minutes or bandwidth." These guys are former bankers.

The future CCN will need both types of executives; telecom and financial.

Let's get started. ♦

ISPS Report Market Index				
Company	Ticker	Price	Shares (in millions)	Market Capitalization (in millions)
America Online	AOL	\$73.69	210.21	\$15,490
At Home	ATHM	\$35.00	118.71	\$4,170
Concentric	CNCX	\$25.50	14.17	\$356
EarthLink Network	ELNK	\$68.50	11.45	\$796
Exodus Communications	EXDS	\$41.50	17.94	\$738
Icon CMT Corp.	ICMT	\$20.88	15.03	\$312
IDT Corp.	IDTC	\$31.00	13.96	\$432
Metricom	MCOM	\$10.75	18.51	\$198
MindSpring Enterprises	MSPG	\$73.00	7.56	\$552
OzEmail Ltd.	OZEMY	\$20.50	10.20	\$207
PSInet	PSIX	\$13.25	50.96	\$682
Rocky Mountain Internet	RMII	\$8.25	6.62	\$54



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Java Jitters

by Doug Shaker

PUTTING JAVA 2D TO WORK

Doug Shaker works at Expert Support Inc., a Silicon Valley company that writes and produces both technical documentation and training materials (www.xs.com).

Doug has one wife, two children, three pets and four computers. This numeric progression pleases him, though he cannot exactly say why. Doug, in a fit of nerdy machismo, has acquired his own personal Internet domain. He can be reached via e-mail at doug@the-shakers.org.

In my last column, I celebrated the fact that Java has a real print model called Java 2D. Java 2D is available for either Java 1.1 or the current beta, Java 1.2. I have been playing with Java 2D since my last column. It is a pleasure to be able to do some real graphics work in Java.

Java 2D is good stuff. This month, I want to show you how to use Java 2D to display text in a non-standard font — meaning something other than Helvetica, Times, and Courier — in a Java application.

This code won't work for an applet yet. A font for Java 2D has to live on the machine that is executing the applet. You can't count on any particular font being on a browser machine, so trying to specify one in particular isn't likely to be useful.

This is a problem — most applet developers would like to be able to use fonts — but the Java poobahs are working on it. The solution will be to have some way for the applet to download the font from its server, use it for the applet, and then discard it.

There are security, bandwidth and legal issues to be solved before it all happens, but you can bet that Adobe and Sun will find a way to make font downloading work.

Sun will because Java is their chance to defend their turf against Microsoft. Adobe will because it will give them an excuse to go out and resell all their existing customers "net-enabled" fonts and make money from them twice. My guess is the solution is about a year away — mid 1999.

The basic scenario for Java 2D font use is that you instantiate a font object, specifying a font name, a type style (e.g. bold), and a point size. Then you create a `StyledString` instance from a text string and an instantiated font. Then you display that `StyledString` in a `Graphics2D` graphics context. Simple enough, really. Here is the walk-through of a fancy font program.

We begin, as always, by importing the classes that we need. In this case, we need the window classes in Java AWT, the event classes, and the new font classes.

```
import java.awt.*;
import java.awt.event.*;
import java.awt.font.*;
```

I wanted this to be a complete application, not just a code fragment. My experience with code fragments

from Java books is pretty spotty. Sometimes they work and sometimes they don't. Sometimes they don't work unless you use another five classes that the author wrote.

So, to make it a complete application, I needed a window object to display in. Now, I should have been a good boy and implemented a Model-View-Controller design. That would have meant that I create at least three classes — one to represent the main logic of the program, another to represent the window that displays the font, and another to listen for events from the controller objects (the menu).

Instead, I was a bad little hacker and threw it all into one class. Therefore, to work, the application class needs to both extend the frame class and implement the `ActionListener` interface. The frame class lets it be a window and the `ActionListener` interface lets it hear mouse events.

```
public class FontTest extends Frame
implements ActionListener
```

Later on, we will have one method that constructs the menu bar and another method that looks for the actions from the menu bar. To have the menu bar and all its parts visible to both methods, they need to be defined outside of both.

The easiest way to do this is to declare them right here, at the top of the class. We declare a menu bar, one menu within that menu bar, and one item within that menu. The item is the exit item for the file menu.

```
java.awt.MenuBar mainMenuBar = new
java.awt.MenuBar();
java.awt.Menu fileMenu = new
java.awt.Menu("File");
java.awt.MenuItem exitMenuItem = new
java.awt.MenuItem("Exit");
```

Now we can start defining methods. We need a main method, so that the virtual machines know where to start things up. We need it, but all we do in it is make an instance of the class `FontTest` and tell it to show itself. This will call the constructor methods that we define later and then call the `paint` method.

```
public static void
main(String argv[]){
(new FontTest("See my frame!")).show(); }
```

In the constructor, we specify a few things about the window, then we build a menu bar.

```
public FontTest(){
// Specify the window setLayout(null);
setVisible(true);
```

```

setSize(new Dimension( 400,300
));
// Add the menu bar
fileMenu.add(exitMenuItem);
mainMenuBar.add(fileMenu);
setMenuBar(mainMenuBar);

```

Now that we have a menu in place, we need to tell the menu item we want to be told if the user selects it. If something happens to it, it will call our actionPerformed method.

```

exitMenuItem.addActionListener(
this);}

```

That was the principal constructor method for the FontTest frame. I also define another constructor for the frame. It takes a string argument that it will use for the window title. All it does is call the default constructor and then add the title to it

```

public FontTest(String title){
this();
setTitle(title);}

```

Once the constructor has been called, the virtual machine will ask our new window to display itself. Or, rather, it will call the window's paint method and hand it a graphics object, a graphics context, to paint on.

We need to define the paint method that it will be expecting. There is one complication, though. Our method needs a graphics context object, but we can't really use it, as is, for font display. For that, we need a Graphics2D graphics context. So we have to convert, or cast the old graphics object to a Graphics2D object.

```

public void paint( Graphics
g1{
Graphics2D g2d=(Graphics2D) g1;

```

Now we have a graphics context, named g2d, that we can use. Next we need to make a font instance. We do this by telling the system the name of the font, the type style (plain, bold, italic, or both), and the point size. This constructs a font instance, which we can use for text display. You don't have to use the font that I did - BeesKnees ITC - any font that you have on your system will do.

```

Font testFont=new
Font("BeesKnees
ITC",Font.PLAIN,32);

```

We use the font instance to create a StyledString. The constructor for the StyledString takes a regular string as one argument, and a font for the next argument. After we have the StyledString, we can display it in a particular spot on the Graphics2D graphics context for our window.

November 1997

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Java Tips compiled by John D. Mitchell

Java Tip 41: POSTing via Java revisited

Learn how to display the HTML document returned by the Web server

Summary

In JavaWorld's August issue, we ran a Java Tip on "POSTing from applets." Not only was the tip popular with readers, but it spawned a number of questions. This new tip on POSTing via Java attempts to satisfy your curiosity. We show you how to send POST requests to Web servers and display the response in an applet. (2,000 words)

The view at www.javaworld.com/javaworld/javatips/jw-javatip41.html

```

StyledString fancyString
=new StyledString("Look at
me!",testFont);
g2d.drawString(fancyString,50,1
50);}

```

Although we could quit here, people might get annoyed. You see, we haven't yet provided a way to close the window. I have had vampire windows — windows that would not die — on my system, and I don't like it. They can be killed through the task manager, but it is obnoxious. To make this application non-obnoxious, we need to make the exit item in the file menu do something useful.

When the exit item is selected, the Java event processor will look for an actionPerformed method in the object that was registered as an ActionListener for that event, and it will pass the menu event off to the method. We need to have an ActionPerformed method ready for it. Ours is pretty simple. It accepts the event argument, then looks at it to see if it came from the exit menu item. If it did come from the exit menu item, it calls the CloseMe method. If it is some other event, we ignore it.

```

public void actionPerformed(
java.awt.event.ActionEvent
fooEvent){
if ( fooEvent.getSource() ==
exitMenuItem)
CloseMe();}

```

The CloseMe method just hides the window, releases any system resources we grabbed, then exits.

```

void CloseMe(){
setVisible(false);
dispose();
System.exit(0);}

```

And we are done. We have a complete application that displays an arbitrary

font. You need Java 2D to make it work on your system. You should be able to get Java 2D for either Java 1.1 or Java 1.2 from the Javasoft developers site — <http://developer.javasoft.com>.

Good luck with it. A few months ago, I tried to build a Java applet that would build a web page on the server from which it was launched and then get its browser to display. I did not succeed. Try as I might, I could not get the applet to write to the server.

There is a very good reason why I didn't succeed. Web servers won't let you write to them. This is a feature, not a bug. Unless the link from the applet back to the server was pretty darned secure, nasty cracker types would be able to fake the connection and do serious damage to the server.

There are, however, two other ways of getting the same thing done. One way is to open a stream to a CGI URL, then write to it with a CGI POST operation. Doing it properly is a pain and a half, but the best discussion of it that I have seen is at www.javaworld.com/javaworld/javatips/jw-javatip41.html.

The second way is to create a Java servlet that runs on the web server that spawned the applet. This is a pain and three-quarters, but it can be done. If you want to give it a try, read the documentation for the java.servlet package and then take a look at Elliott Rusty Harold's book Java Network Programming (O'Reilly and Associates, ISBN 1-56592-227-1). That should get you started.. ♦

Java 2D fonts in an application

```
// This is a minimal program that
// illustrates the use of
// Java 2D Fonts in an application.

// import the base classes that we
// will need
import java.awt.*;
import java.awt.event.*;
import java.awt.font.*;
// I did all this in one class, so
// the main application, the Frame
// that it displays in, and the
// object that listens for the
// Frame's messages are all the
// same object.
// The class must therefore
// extend the Frame class and
// implement the ActionListener
// interface.
public class FontTest extends Frame
    implements ActionListener {

// Declare items that we will need
// to build the menu bar.
// The menu bar itself.
java.awtMenuBar mainMenuBar
    = new java.awtMenuBar();
// The file menu in the menu bar
java.awt.Menu fileMenu
    = new java.awt.Menu("File");
// The exit menu item in File
// menu.
java.awt.MenuItem exitMenuItem =
    new java.awt.MenuItem("Exit");
// This is a one-class application,
// so it has to have a main method.
public static void
    main(String argv[]){
// Now instantiate an instance of
// the frame, and tell it to show
// itself. (new FontTest(
// "See my frame!")).show(); }
// Now the Frame will stay up until
// someone closes it.

// The constructor for the frame
// is where the menu bar is added
// to the frame. We need a menu
// bar so we can terminate the
// application easily.
// Here it is:
public FontTest() {
// Don't need a special layout
// manager for the frame.
setLayout(null);
// We do want the frame to be
// visible
setVisible(true);
// And we want it to be 400 pixels
// by 300 pixels.
setSize(
    new Dimension( 400,300 ));

// Now, add the exit menu item to
// the File menu.
fileMenu.add(exitMenuItem);

// And add the File menu to the
// menu bar.
mainMenuBar.add(fileMenu);

// Then attach the menu bar to
// the frame that we are using.
setMenuBar(mainMenuBar);

// Now tell the exit menu item
// that, if something happens to
// it, we want to know about it.
exitMenuItem.addActionListener(
    this); }

// This is an extra constructor
// for the frame. All it does is
// add a title to the window if
// one was specified. Otherwise
// it just calls the default
// constructor.
public FontTest(String title)
{
    this();
    setTitle(title);
}

// Here is where the Font stuff
// happens.
// For any Frame, we have to define
// a Paint method which takes, as
// an argument, a Graphics object.
// This method will be used to
// paint everything below the menu
// bar.
public void paint( Graphics g1){
// But the font stuff requires a
// Graphics2D object to work on,
// so we have to cast the plain
// Graphics object to a
// Graphics2D object
Graphics2D g2d
    = (Graphics2D) g1;
// Now we tell the system the name
// of the font that we want, the
// style, and the point size.
Font testFont =
    new Font(
        "BeesKnees ITC",
        Font.PLAIN, 32);
// Now we create a StyledString
// object out of what we want
// displayed and the instantiated
// font.
StyledString fancyString =
    new StyledString(
        "Look at me!", testFont);
// Finally, we draw the string
// on the Graphics2D object at
// a place 50 pixels in and
// 150 pixels down.
g2d.drawString(
    fancyString,
    50,150 ); }

// And the window is up and
// displayed.

// Finally, we need a method
// to execute it anyone selects
// exit item on our menu.
// It needs to take an
// ActionEvent as an argument.
//
public void actionPerformed(
    java.awt.event.ActionEvent
    fooEvent) {
// If the ActionEvent came from
// the exit menu ...
if ( fooEvent.getSource()
    == exitMenuItem)// ... then call the
CloseMe method.
    CloseMe(); }

// When it is time to close the
// window ...
void CloseMe() { // Hide the window,
    setVisible(false);
// Free up any resources we had,
dispose();
// And exit the application.
System.exit(0);
}

} ♦
```

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BIG BOARD BRIEFS

by Wallace Wang

AMERICA ONLINE VS. SPAMMERS (AGAIN)

In many communities, newspapers publicize the names of men caught soliciting prostitutes. The idea is to deter other men from soliciting prostitutes as well. Similarly,

America Online has taken the idea of posting a list of the 10 most annoying spammers. AOL's 10 Most Wanted list includes six porn spammers, three non-porn and one mixed porn. Those include junk e-mailers such as The LoseWeight Center and porn e-mailers such as Lovetoys Productions and CN Productions.

Besides publicizing the most obnoxious spammers, America Online is also attacking these spammers in court. America Online filed a suit in the U.S. District Court for the Eastern Division of Virginia, charging that Eddie Davidson used domain names such as AOLsex.com along with spam to lure people to his site.

Recent victories against spammers include a judgment against Prime Data Worldnet Systems, Inc. that promoted "get-rich" schemes, and against Squeaky Clean Marketing and Cyber Services, which promoted products ranging from baldness cures to get-rich-quick schemes, as well as do-it-yourself spamming software.

"We take the issue of spam very seriously," said AOL spokesperson Tricia Primrose. "It's a huge frustration to our members and while there is no single silver bullet to eradicate the problem, we will continue on several fronts including litigation, technology, and legislation."

AOL REFUSES TO REMOVE KKK SITE

Despite AOL's legal battles against spammers, AOL has been accused of allowing a Ku Klux Klan site on America Online. AOL officials say they don't sympathize with the racist organization, but they won't take the site down unless it was to call for violence.

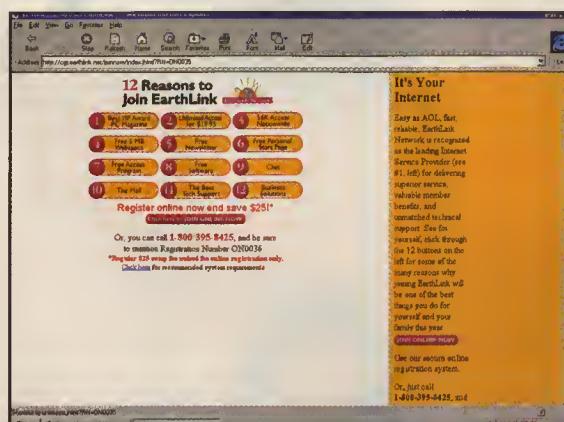
"We have been in touch with (the Anti-Defamation League), and we obviously agree that what the KKK represents is reprehensible," said AOL spokeswoman Wendy Goldberg. Nevertheless, AOL still allows the KKK to post the site despite the fact that AOL's service terms ban hate-speech from its network.

The KKK web site decries what it calls "the insane notion that two peoples can occupy the same place at the same time in harmony," and advocates "the establishment of a white Christian order upon the earth." The site also contains KKK rhetoric derogatory toward non-whites and Jews.

Strangely enough, AOL has no trouble taking down web sites, even those hosted by other Internet prov-

iders, that post anti-AOL programs such as AOHell, yet somehow the Ku Klux Klan's web site on America Online is okay. So apparently the message is that as long as you're not inciting others to attack America Online, you can be as racist as you want until you stop paying your bills to AOL.

EARTHLINK CHALLENGES AOL WITH INTERNET ROOM



In still another feeble attempt to crack AOL's hammerlock on the Internet market, EarthLink (www.earthlink.net) has offered a new product dubbed the "Internet Room." The Internet Room is a way of putting together a site that not only displays snapshots and personal information, but also incorporates fairly advanced features such as file transfers, Internet telephony and chat, without having to do any HTML programming. In other words, the Internet Room lets you create a web site that acts more like a bulletin board system. (Remember those?)

This move is another attempt by EarthLink to market itself as an easy-to-use alternative to America Online. While AOL supports 11 million subscribers, EarthLink only has 450,000 subscribers.

AMERICA ONLINE PLEDGES TO GUARD PRIVACY

America Online has pledged they won't collect private information from users under age 13 without first obtaining written permission from their parents. George Vradenburg, vice president and general counsel at AOL, said the new "Parental Permission First" policy is aimed at giving users more assurance that their children can have a safe and productive experience on the service.

Wallace Wang is the author of *CompuServe For Dummies, Visual Basic For Dummies, Microsoft Office 97 For Dummies, and More Microsoft Office 97 For Dummies.*

When not working with computers, he performs stand-up comedy and has appeared on A&E's *Evening at the Improv* TV comedy show. He can be reached via e-mail at 70334.3672

@compuserve.com,
bothekat@aol.com,
bo_the_cat@
msn.com or
bothecat@
prodigy.net

"We must set higher standards than the media that came before us," particularly television, Vradenbergs said this week. "Consumers have to be given notice of how their information is going to be used, choice about that use, and enforcement of our privacy policies."

While this sounds nice, it's mostly a knee-jerk reaction to AOL's incompetence when they freely provided personal information about a gay sailor to Navy representatives. Until the next major public relations crisis strikes AOL, don't expect the online service to improve any until disaster threatens to topple them once again.

AMERICA ONLINE SUBSCRIBERS SPEND MORE TIME ONLINE

To no one's surprise, America Online has discovered that with a flat-rate pricing plan, its subscribers are staying in front of their screens longer, giving marketers and advertisers a bigger shot at their business, an AOL executive said. The average AOL subscriber now spends 51.5 minutes a day online, compared to 41 minutes just last December.



America Online's phenomenal growth is likely to continue when AOL allows subscribers to have film developed and posted directly to personal Web pages for storage. The pictures can be included in e-mail. Secondly, AOL plans to enter markets in Australia and Hong Kong this year, increasing its international profile and profits.

AOL MAKES A DEAL WITH SOFTWARE.NET

Software.net has paid America Online \$21 million for prime positioning on the nation's largest consumer online service for the next three years. In addition to this large infusion of cash, AOL will also take a minority \$2 million investment stake in the 4-year-old privately held company.

Software.net sells approximately 30,000 software titles. About 3,000 of the merchandiser's product list is available for immediate download online. With so many people paying millions for advertising space these days, someone could possibly break America Online's virtual monopoly by offering an online service for free, supported solely by advertising, much like today's commercial television networks.

AOL TRIES TO TACKLE THE BUSINESS MARKET (AGAIN)

In an attempt to break away from the consumer market and tackle the more lucrative business market, America Online has unveiled a plan dubbed AOL Enterprise. According to this plan, AOL will sell itself as a provider of network access services for corporate telecommuters and remote workers. Thus corporations will be able to rent the online service for use by employees when they are out of the office.

AOL claims that its sprawling network can be a low-cost alternative to the 800-number telephone lines that far-flung workers typically use to tap into centralized corporate computing applications, such as Lotus Notes and electronic mail.

If successful, AOL could log between \$50 million and \$100 million in new corporate business in the next year. "It will have earnings impact for us in 1999," said David Gang, senior vice president of strategic development at AOL.

Lotus Development has already agreed to integrate a dialer in future versions of Lotus Notes so users can access the AOL network. Oracle has already signed up as the first customer for the AOL Enterprise service.

Of course, the question remains what will happen to CompuServe, which originally targeted the corporate market long before America Online. Most likely, America Online will slowly gut CompuServe and let the online service fade away into obscurity. The other alternative is to pump money into the dying online service and effectively compete against America Online, generating the same amount of income for twice the amount of work. With this unlikely alternative, expect CompuServe to fade away completely in a few more years. ♦

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Doug Mohney was employee #10 at DIGEX. He has learned, and forgotten, a lot about help desk support, competitive intelligence, sales and marketing, leased-line service ordering, telco service, and public relations.

He makes no pretenses at understanding anything more about the technical side of IP other than being able to get a PPP account working.

His writings have been published in *LA View*, *Washington Technology* and the *Washington Post*. Doug receives e-mail at moo@clark.net.

STREAMING MEDIA

by Doug Mohney

AT THE SYMBOLIC ORACLE OF TECHNOLOGY

It's Tuesday, April 7, 1998, at 1:30 a.m., in a grotesquely overpriced hotel room in Las Vegas, and I'm running on a combination of Pringles (the new mini-cans) and Coke (the drink). Sometime in the next 45 minutes I'm going to crash and burn, a metaphysical flaming nosedive out the window, twenty-six stories down. If I was a real man, I'd make this some sort of pantheon to the Mint 500 run, but this is the '90s, and using the quantities of drugs as described by The Master of GonzoJ, would put me o-u-t as in locked away at the closest mental ward.

There are two faces to Vegas; night and day. The nighttime is a glittering, neon city that truly doesn't sleep. Where show times are easily set at 11 p.m., with anticipation that people will attend, and the non-alcoholic bars within bounds of the Strip don't close until 3 and 4 a.m., as \$10s and \$20s swiftly change hands between charged-up males and beautiful, nude females. During the day, the bright sunlight burns away the tunnel-vision fog to reveal a dust-covered city smack in the middle of the desert, surrounded by mountain ranges.

Lost among the nighttime glitz and sobering sunlight is the stark-raving-mad fact that the four largest trade shows on the face of the planet are held here: Comdex, Network + InterOp, the Consumer Electronics Show, and the National Association of Broadcasters convention, NAB for short.

There's a standing order at my company to never ever go to Comdex/Vegas, a time where the event overwhelms the carrying capacity of the town. Cab lines 400 people deep, traffic logjams emulating DC gridlock, and room rates specifically hiked higher in anticipation of overbooking.

Any other time, room rates go up on Thursday, higher on Friday, highest on Saturday and Sunday, then drop back down on Monday and stay down for the rest of the week, following the ebb and flow of gamblers rolling in with fat pockets on the weekend and rolling out empty. My room at the MGM Grand (www.mgmgrand.com) shot up \$100 per night on Monday.

However, going to Vegas is unavoidable for some shows. I'm here for NAB (www.nab.org), the self-styled "Convergence Marketplace," where the melting pot of new wave Internet and old line broadcast simmers, as parties in both camps are trying to predict the future without any reference points. On a Sunday afternoon, an afternoon where I should have been trying to sleep off jetlag or standing around a dice table yelling for numbers, attendees were standing room

only for the "Internet Technologies and Applications Conference" track at the Sands Convention Center. Conference participants and speakers alike freely admit they don't understand the brave new world forming before them.



Peggy Miles at COMDEX/Vegas '98

One of the more popular speakers was Peggy Miles, she of the now available Internet World Guide to Webcasting by Wiley Publishing. Miles, president of Intervox Communications, is also one of the founders of the International Webcasting Association (www.webcasters.org). Over the past three years, she has played evangelist within the radio and TV world, educating them on web sites, streaming media, push technologies, and many of the other aspects of the Net. For the conference, she created a 70 page guide to webcasting in conjunction with NAB (the organization, not the conference).

The Sands plays host to NAB Multimedia World, where software companies, Internet broadcast companies, and anyone trying to sell anything to broadcasters are hanging out in the halls. It's a holistic clash of trends. Some people are trying to play Frankenstein and breath life back into cold, dead interactive TV, while others are jockeying to make money in the bridge-space between traditional and Internet broadcast. Make no doubt about it, if you want to collect pieces of the puzzle on Internet broadcast, NAB Multimedia World was the big toy box.

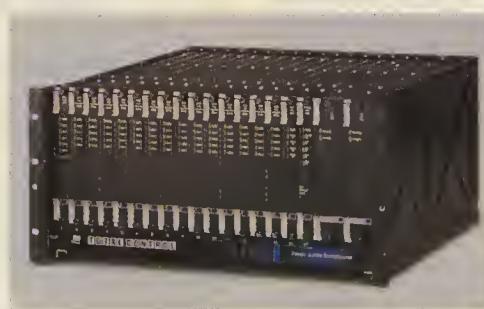
Certainly AudioNet (www.audionet.com), the first arriver Internet broadcast provider, was waving their flag. With over 260 radio and television stations, and claiming 50 percent of live and on-demand streaming media hosted on their network, AudioNet is riding high. Does anyone find it ironic that Yahoo!, a first generation Internet "destination" company is a strategic investor in AudioNet, a second generation Internet "destination" company?

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AudioNet 10' x 20' Booth at Comdex/Vegas '98

AudioNet's stated mission is to be the leading aggregator and distributor of multimedia content on the Net. With the BBC, NBC Sports, Major League Baseball, and CNN listed as key clients, the company is certainly positioned well as the hot ticket for an IPO sometime in the future.

However, AudioNet's 10 x 20 booth was drowned out by the terrible titans of Microsoft and RealNetworks, a slugfest of positioning and marketing power. Certainly Microsoft, the heavyweight contender, opened up its prodigious wallet to come out swinging with the sponsorship of the "Internet Theater," a constant multimedia assault on the senses to proclaim the goodness of NetShow (www.microsoft.com/netshow) and other Microsoft products. RealNetworks, however, sponsored the high ground - the press room - and released a raft of announcements on Monday, April 6, including agreements with ABC Radio, CNN Interactive, JAMTV and the Rolling Stones Interactive site. Real's deal with ABC Radio is an exclusive. If you want to hear Paul Harvey News & Comment on the Net, you can't get it in NetShow and apparently you won't be able to get it over AudioNet.

LOCATION, LOCATION, LOCATION

One of the more sweetly ironic scenes was the positioning of TV on the Web's (www.tvontheweb.com) booth, a 20 x 20 island, in front of the Internet Theater. No sooner had the Microsofties started their Internet sermons, than J. Geils, Gerry Beaudoin, and Billy Crist came to the rescue with jazz; artificially sweetened technological marketing pabulum smoothly brushed away by two excellently played guitars and a bass. Much to my great pleasure, Lisa Amore, director of marketing for TV on the Web and an angel in her own right, was able to get me some face time with a very laid-back J. Geils.

FREEZE-FRAME

J. Geils is no stranger to changing times, having gone from rock superstar with such hits as "Angel is a Centerfold" and "Freeze Frame" with the J. Geils Band in the 80s, to a return to his musical roots in jazz. He's now making the music that inspired him in the 60s, created by classic performers such as Miles Davis, Louis Armstrong, and Charlie Parker.

He seems a little amused at the hype around the Internet and PCs, describing the latter as "*inconsistent tools*." "I can set up a lathe to cut parts for my cars and I know I can get the same quality part time after time," he said. "PCs don't always do



J. Geils and Lisa Amore



J. Geils and company jamming at NAB

that. The Internet is great, but it is in its infancy." His experience with inconsistent tools is pretty deep. In the late 80s, he and a colleague developed an inventory management system in dBase III+ for his classic car business.

Geils also has a Renaissance streak in him, proved in part by his resistance to launch out on an 80s cash-in tour despite several offers. "No matter how tech you are, the arts will prevail," he said. "If technology helps promote music, it's good, but the arts should drive technology, not the other way around."

HUDSON! RIG A BYPASS!

TV on the Web used NAB to launch a set of "narrowcast" video channels. Narrowcast channels are specifically targeted to a specific demographic, one that can't be supported by traditional broadcast or cable channels. The channels include The American Spirit Television Network (ASTN), The Chill Out Channel, The Shipping News, Hi Tech Business, The Speakers Channel, The Equestrian Channel, The Emergency & Disaster Channel, and The Able TV Network.

While it is possible that something like "The Equestrian Channel" may end up on cable one day when we have 500 channels (Yeah, right), it's highly unlikely we'll ever see "The Shipping News" for up to date maritime and world trade news.

If the broadcast community was paying attention to the TV on the Net announcements, the Internet is emerging as a bypass distribution mechanism for video content for materials that just can't make it on traditional broadcast or cable.

GOP-TV pulls around 2,000 viewers a week over the Net, while bootleg broadcasting of "South Park" caused an uproar at Comedy Central, as avid fans got their fix via the Net.

Cable companies nurtured the myth of 500 channels only to have it shot down as content providers fight to have their channels put up on limited space. Comedy Channel, VH-1, and the Fox 24 hour News Channel are a few of the content providers that have had to fight to get put on local cable space.

Don't believe me?

Marc Rauch and the folks at the Auto Channel (www.theautochannel.com) have already walked the walk and talked the talk.

If bandwidth to the home becomes plentiful (one big "If"), more economically borderline cable and UHF channels will end up available through the Internet. Further, people with a good idea will end up bootstrapping their video content channels through the Internet rather than trying to fight the rat race to get cable space.

DATACAST - THE KEY TO LIBERATION?

Many companies, including Microsoft in collaboration with WavePhone, are placing bets on the ability to send information through the airwaves directly to the desktop. Word on the floor was that within a year, Windows 98 and a PC with a TV tuner board (preferably built-in), will be able to receive data straight on the desktop through the vertical blanking interval (VBI) and they'll be enough content moving around to make it worthwhile.

Content will be provided by CBS Sports-Line, PBS ONLINE, Quote.com, The Weather Channel, N2K's Music Boulevard, BarnesandNoble.com, NECX, People, TIME, Entertainment Weekly, Money, FOR-TUNE, and Sports Illustrated for Kids.

Datacast provides a second means to deliver information in a push or streaming fashion. It won't be a two-way communications channel, but it'll get popular info onto the desk top at 128 Kbps or better. Of course, it begs the question of what you do if you don't have a local PBS station within reception range or don't want to shell out for a drop-in tuner card. And while receiving content will no doubt be "free," the price paid

will be in embedded advertising and various other surprises so the appropriate demographic data is gathered.

ISPCON '98 - THE FEW, THE PROUD, THE WEIRD

My thanks to all of you who said hello between sessions in Baltimore. I'm hoping to follow up on a couple of good story leads, including an independent Internet broadcast station in Philadelphia, and a site operated for Jessica Hahn. Yes, THAT Jessica Hahn. Somehow, I doubt I can be her Jim Baker.

GOAT HORNS TIME

Back in the March 1998 *Boardwatch*, I wrote about a DEC 900Mhz wireless product. Unfortunately, I mis-described it as a glorified cell phone, rather than a competing gizmo to the Breezecom wireless LAN solution. Of course, my misunderstanding is caught by no less than one of the developers of the DEC wireless product. Foul acknowledged. I saw the DEC wireless product being used at a NANOG meeting and assumed phone connectivity rather than LAN connection. ♦





EURO NEWS

Richard Baguley

THE HOUSE OF COMMONS DEBATES THE INTERNET

The House of Commons isn't the most progressive of places. Anybody who has seen Prime Ministers' question time on C-SPAN in the U.S. will have seen some of the more bizarre rituals that it involves, such as the Speaker's wig and the often rowdy interruptions that Members of Parliament make.

However, recently the House of Commons tried to get with the times, which lead to a recent debate about the Internet. This wasn't the first time the Internet was debated in the House, as it was mentioned in numerous debates over related issues. But this one was different — it was more directly related to the Internet and IT.

Unsurprisingly, much of the debate focused on the twin topics of regulation and taxation. Derek Wyatt (the MP who started the debate) kicked off the regulation debate by saying, "It is possible to regulate the 250 UK ISPs, but only if they are connected via a telephone line. Hughes, Olivetti (and others) provide satellite services that can deliver the Internet with their own return path. It is difficult to know how they will be regulated". He didn't really expand on what he meant by this rather curious comment...

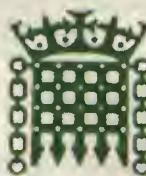
Although none of the real luddite MPs were in the House during this debate, several MPs did use it to grind their own particular axes. For instance, the Conservative MP Dr. Julian Lewis raised a still-ongoing case between himself and a UK magazine called *Scallywag*, which made accusations about his private life. He sued the magazine, and *Scallywag* was forced to pull the issue from the newsstands.

Instead, they put the allegations on its web site. He then sued the ISP that hosted the site, and the ISP was forced to remove the web site. The magazine quickly bought space on a web server outside the UK, and the MP claims that he is unable to take any further legal action to get them to remove the allegations. "There is no effective action I can take to prevent that provider from continuing to blacken my name," he said in the debate. "My election campaign was, to some extent, undermined by this filth. It is filth on an international level."

Meanwhile, Derek Wyatt had an interesting suggestion. Instead of building the Millennium dome, why not give every family in the UK a PC? "I want to make some suggestions for the government to consider," he told the House. "By 2002, every home will be given a computer. That will cost no more than the current government expenditure on the Millennium dome. That would be a much better way in which to welcome in the 21st century."

Although the debate only lasted an hour and a half, it covered a lot of ground. Issues raised included crime ("I should point out that the [police] — I cannot go into detail — are using the Internet to track criminals," said Wyatt) and recent media headlines about how a group of schoolchildren allegedly downloaded details of how to build a bomb from the Internet and destroyed a telephone box.

Actually, I should point out that the House of Commons has been quite progressive in some ways — the entire text of all the debates which take place in the house is now available on a searchable web site, www.parliament.thestationery-office.co.uk/pa/cm/cm_hansrd.htm. The government is also making other moves to try make government information and resources available online, and the BBC provides a video and audio feed of Prime Ministers' question time on their web site at www.news.bbc.co.uk.



DIGITAL WIRETAPPING IN THE NETHERLANDS - NEW LAWS PROPOSED

Over the past few months, I've mentioned the moves by a Dutch ISP to oppose a police order to tap the Internet traffic of a user. The ISP, Xs4all (at www.xs4all.nl), refused to comply with an order by the Dutch Ministry of Justice to monitor and log the Internet traffic of a user who was under investigation by the police. The ISP refused to comply, claiming that the Ministry had overstepped its powers. Now, it seems that the situation may be altered by a section of a proposed law, which would force ISPs to build-in the ability to tap users' email and other data.

The critical part of the law is in Article 13.1 (the Dutch Government provides an English translation at www.minvenw.nl/hdtp/wetsite/act.html). The Article states: "Providers of public telecommunications networks and public telecommunications services shall not make their telecommunications networks and telecommunications services available to users unless they can be wiretapped . . . rules may be laid down with respect to the technical ability to wiretap public telecommunications networks and public telecommunications services." What this basically means is that any telco or ISP in Holland that does not build in the option to allow wiretaps of their data or voice networks will be breaking the law.

Later articles make it clear that the ISPs have to cooperate with the police in implementing the wiretap. Article 13.4 states: "Providers . . . are obliged to co-operate with the competent authorities with

Richard Baguley is the technical editor of Internet Magazine (www.emap.com/internet), the UK's best selling Internet magazine. His writing appears in magazines such as *.Net*, *WebMaster* and *Wired News*.

He has just bought himself a rather flash new mobile phone, but nobody has yet bothered to ring him on it.

He can be contacted at bagger@baggers.com.

respect to the provision of all information which is necessary for issuing a special order." In other words, the ISP has to supply details of customers the police are interested in.

Just to rub it in, the ISP also has to pay the cost of implementing the wiretap ability. Article 13.6 states: "The investment, exploitation and maintenance costs of the technical provisions which will be incurred by the providers . . . in order to comply with Articles 13.1, 13.4 and 13.5 shall be borne by the aforementioned providers."

However, some of the costs can be claimed back from the government. Article 13.6 states: "Providers . . . shall be entitled to compensation from the national treasury for the administrative and personnel costs incurred by them directly through compliance with an order." In other words, the ISPs have to pay to set the system up, but the government will compensate them for costs incurred in actually using it.

At the time of writing, the law was passed by the Upper House of the Dutch Parliament and was waiting to be debated in the Lower House. Whether it will make it into law isn't clear — many ISPs and civil liberties organisations lobbied against the law.

The worrying prospect is that if the law gets through in Holland, other countries could try and pass similar laws — some law enforcement agencies in the UK have already said that they would welcome laws of this type. I'll be following the progress of this rather worrying law in future issues...

GREAT GADGETS OF THE UK

I don't normally write about new gadgets, but this month I'm going to make an exception, as a couple of new Internet related gadgets have caught my eye. The first of these is the new Libretto from Toshiba (www.toshiba.com). This impressive little sub-laptop PC is based around a 166 Mhz CPU and comes with a respectable 1.6 GB hard disk. While sub-laptops aren't anything particularly new, up until now they haven't been particularly impressive — they simply haven't been powerful enough to actually be of any real use.

The only real criticism I have of the new Libretto is the keyboard. Like many laptop keyboards, it's a bit soft and squidgey — you don't get the right feel when you're using it. Personally, I've been a Psion (www.psion.com/computers) man for a long time — they do what I need (which is mainly boshing in text) with the mini-

mum of fuss. But when you combine the Libretto with the next gadget, you get something that could convert even me...

The second gadget is the Nokia Cellular Card Phone (www.nokia.com/products/phones). This rather cute little thing is a cellular phone in a PC Card. Effectively, it's the guts of a GSM digital mobile phone without the battery, keypad, microphone and speaker.

This means that most of the unit is on the PC card itself, apart from the aerial, which is on a little knobby bit that sticks out about three centimetres from the PC card slot. Although it can be used to make voice calls (using the PC's sound card and a microphone), this isn't really what it is designed for — it's mainly aimed at data communications.

Previously, this was a question of buying a suitable digital mobile phone, buying a suitable PC card, linking the two together, and finding a good religion to pray with to get the whole thing working. By contrast, all the card phone requires is some drivers (which come with the card) to be installed, and you're off...

Of course, the downside is the speed — digital communications only work at 9600 bits per second, which makes

browsing the Web something of a pain. However, it's fine for sending or receiving e-mail or for remote diagnostics. With the included drivers, the CardPhone appears as a normal Hayes compatible modem on a com port, the location of which can be decided by the user, so it can also be used with proprietary software such as that used for administering modem racks or whatever.

The Card Phone is also designed to work in countries whose phone networks use the GSM standard, which isn't currently widely used in the U.S. However, Nokia also make phones for the US market, so they may decide to market this unit in the U.S. if you ask them nicely enough.

These two bits together make a very good combination. They allow Internet access using standard Windows 95 programs, in a unit that easily fits into a shoulder bag and weighs less than a kilo. Of course, there are areas where both could be improved, such as the keyboard and battery life, with the batteries on the Libretto currently lasting around one and a half hours. However, despite these, it seems that the long-held dream of portable and affordable Internet access is getting closer...◆



Notes From The Underground

by Wallace Wang

DENIAL OF SERVICE ATTACKS

On Monday, March 2, 1998, while Bill Gates was testifying before the Senate, to convince them that Microsoft did not have a monopoly, a curious event occurred. Thousands of Windows-based university and government computers crashed, including computers belonging to the National Aeronautics and Space Administration (NASA), the Massachusetts Institute of Technology (MIT), and the University of California at Berkeley.

Jeffrey Schiller, network manager at MIT, said a malicious hacker exploited a bug in the Windows 95 and Windows NT operating systems known as "Boink," "Teardrop II" or "New Tear." Apparently the hacker accessed the MIT computers, obtained a list of other computers connected to the Internet, and then sent specific data packets calculated to crash all Windows-based computers connected to the Internet," Schiller said.

While no data was lost, security experts quickly classified the problem as a "denial of service" attack. Although denial of service is what you might expect if you sign up with America Online, the official term defines denial of service as preventing people from using their computer resources.

DENIAL OF SERVICE ATTACKS

Denial of service attacks can simply crash a computer, or they may be more sophisticated and target specific individuals (to keep them from using their Internet account) or punch holes through the defenses of computers hosting firewalls. Denial of service attacks simply overwhelm a targeted computer with bits of information, much like throwing masses of soldiers against a machine gun nest until the dead bodies eventually smother the enemy.

One of the simplest denial of service attacks is the ping attack. A ping command lets you verify that a specific computer is available. Pinging another computer sends a message to that computer, asking if that computer is up and running. When the receiving computer returns your ping, you know that the other computer is available.

Flood pinging is one method of a denial of service attack. With flood pinging, you send out a constant stream of pings to another computer. This keeps the targeted computer so busy returning your pings that it can do little else, effectively preventing others from using that computer. Rather than have one computer flood another computer with ping commands, a varia-

tion of the flood pinging attack is to have multiple computers ping a single computer simultaneously.

While effective, flood pinging attacks are primitive and thus looked down upon in the hacker community. Hackers tend to strive for more elegant solutions and flood pinging is something any moron can do. Rather than merely overload a target computer with numerous ping commands, hackers have devised a ping attack that requires only a single ping.

This single ping attack takes advantage of the way computers use packets. Every computer on the Internet uses packets to verify that another computer has received the proper information free of errors. For example, when you send e-mail, the computer breaks up the text into little pieces called datagrams. Then it wraps additional information around each datagram that defines what computer the e-mail needs to go to, where it came from, and a checksum calculation so the receiving computer can verify if it received the information correctly. The combination of the datagram along with all this additional information is called a "packet."

Rather than send one big packet, computers usually send groups of smaller packets. That way if one packet gets lost during the transmission, the sending computer just needs to send another copy of that smaller packet, rather than one big packet. The theory behind the single ping attack is to send one large packet that overflows the targeted computer's buffers.

A PING OF DEATH ATTACK FROM WINDOWS 95

It's the Ping o' Death Page!

How to crash your operating system!

Maintained by [Malachy Kerney](#), last updated 1/22/97, 1800 GMT
Please mail me with any updates, corrections or new information, being sure to include the word "ping" in the subject line.

List of mirror sites
[The Ping o' Death diary - new information in the order it's received](#)

The primary site moved to <http://frogspect.extraseptember.com/ping/> on 1/22/97. Great thanks to [Mike Bremford](#), who started this site and maintained it through the period of constant updating.

Javier Romeo of [FED Security](#) has done a brilliant job of translating all the pages to Spanish (I have enough trouble maintaining them in English...) They're available [here](#)

1. The Problem

In a nutshell, it is possible to crash, reboot or otherwise kill a large number of systems by sending a ping of a certain size from a remote machine. This is a serious problem, mainly because that can be reproduced very easily, and from a remote machine.

To use a single ping attack from a Windows 95 system, you need a PPP or SLIP connection to the Internet using the dial-up networking program. (America Online users won't be able to use the following instructions, which is why hackers tend to look down upon America

THERE ARE ENOUGH COMPLEXITIES IN LIFE. CONNECTING TO THE INTERNET SHOULDN'T BE ONE OF THEM.

Creating an Internet presence can be a frustrating experience, even for the expert. Beyond the web server there are routers to make the connections, FTP to move the files, and e-mail servers to give your mail a home. And don't forget the Domain Name Server that's required so the world can know your name. Even after you gather all the pieces, you still have to integrate them. And the costs, in time and money, can be staggering. But now there is an easier way.

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Configuration Cost	Pre-configured	1-3 hrs
Sub Total	—	\$70 Avg
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Configuration Cost	Pre-configured	5-30 hrs
Sub Total	—	\$615 Avg
Web Server Configuration Time	Included	\$1510
Configuration Cost	Pre-configured	3-25 hrs
Sub Total	—	\$490 Avg
FTP Server Configuration Time	Included	\$490
Configuration Cost	Pre-configured	1-2 hrs
Sub Total	—	\$50 Avg
DNS Server Configuration Time	Included	\$50
Configuration Cost	Pre-configured	5-80 hrs
Sub Total	—	\$1600 Avg
E-Mail Server Configuration Time	Included	\$2095
Configuration Cost	Pre-configured	10-100 hrs
Sub Total	—	\$2480
Support Costs Per Year	\$795	\$580
	Includes Hardware and Software Protection	\$1900 Avg
		\$2100
		No Hardware or Software Protection
Number of Vendors	1	5
Total Cost	\$8260	\$13,600
Time from receipt to fully operational site	2 Days	120 Days

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Many products claim to be easy to use, but the proof is in the time you spend getting it up and running. With other products you have to *learn everything* before you can *do anything*, and with the Internet there's a lot to learn. Only the IPAD allows you to get started immediately, and learn as you go. Information Week said of the IPAD "*from box to working system in two hours even with mistakes.*"

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"It's a modernization of a classic good-versus-evil, Luke Skywalker fights Darth Vader scenario." - The Village

New To AntiOnline:

Online since it isolates the user from exploring the system.)

Once you connect to the Internet, click on the "Start" button and click "MS-DOS," which opens an MS-DOS window displaying the prompt:

C:\windows>

An ordinary "ping" command looks like this:

C:\windows\ping hostname

where "hostname" is the address of another computer. To send a single ping of death to a computer, use the following ping command:

C:\windows\ping -l 65510 target.
computer.mil

Some (but not all) computers will crash or reboot when they get this ping. The -l



65510 parameter creates a giant datagram. When the receiving computer tries to reassemble this datagram into a complete packet, it overflows its buffer, causing a crash, a hung system, or a reboot.

Of course, many operating systems have patches to prevent this ping of death attack from succeeding, so don't expect this command to take down the entire Internet in one blow. For computers that haven't fixed this problem, this ping attack will still succeed. To learn more about ping attacks along with the vulnerabilities of different operating systems and the patches available, visit the Ping o' Death Page at www.sophist.demon.co.uk/pingindex.html.

The ping attacks are just one method for conducting a denial of service attack on a target computer. For more information about other types of denial of service attacks, visit the Denial of Service Page at www.student.tdb.uu.se/~t95hhu/public/DoS.html. This site provides source code and programs for attacking another computer along with information for plugging up the security holes in your own computer.

To learn more about denial of service attacks including programs, source code, and the news about the latest hacker attacks, visit the AntiOnline web site at www.antionline.com. For another source of text files, programs, and source code for infiltrating another computer along with tools for revealing holes in a computer's security, visit the Rhino9 web site at <http://207.98.195.250>. If you visit www.roothell.com, you can use a special search engine that only looks for security related web sites.

Learning how to conduct a denial of service attack can show you the flaws that may exist in your own operating system. While you could use this information to hurt others, you could also use this same information to help others and protect yourself. The choice is yours, but if too many people abuse this information, you can be sure that your government will pass laws to remove any choices for you. ♦

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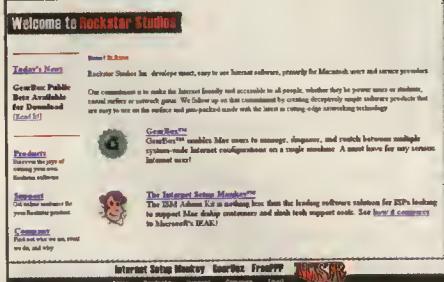
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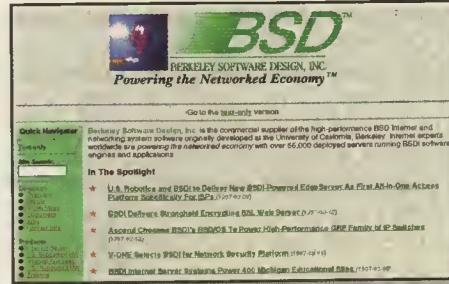


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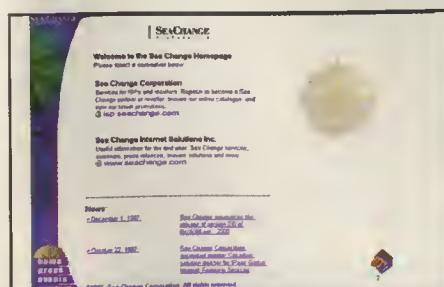


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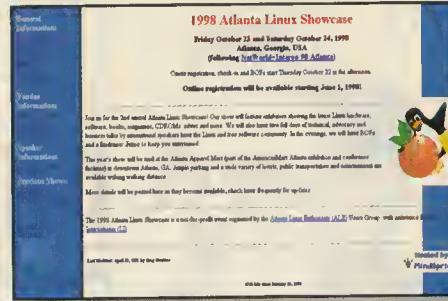


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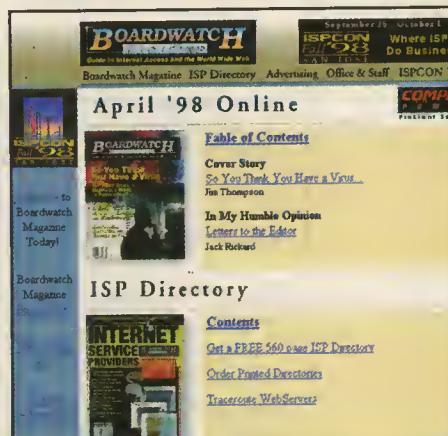
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DVORAK ONLINE

by John C. Dvorak

PALMPILOT CODE MORE ROBUST THAN WINDOWS

The next generation chip wars will target the chips used in embedded systems and the Wintel desktop duopolists — Intel and Microsoft — aren't about to let this one get away, although both companies trail badly. The hottest machine on the market is the PalmPilot from 3Com and it's powered by a proprietary OS utilizing the Motorola Dragonball chips.

But, in fact, very few owners of the device know that inside is a Motorola chip and the unit itself is somewhat more powerful than the second generation Mac, the 512K.

This observation is important because it tells me that a typical Wintel marketing scheme simply won't work, no matter how much FUD Intel and Microsoft spew into the market. The reason for this is that unlike other emerging computer markets, this one is not led by the so-called early adopter. This means that the propaganda machines that normally manipulate the mindset of the computer using community will have no effect on this group, or the market.

The early indications of this should concern Microsoft in particular. And by the early indications I do not mean the failure of the Windows CE machines to find a market. I'm referring to the earlier Winpad vaporware announcements from a couple of years back which failed to excite anyone except members of the media who boosted this technology on behalf of Microsoft. Still, nobody cared.

With reasonable control of the media Microsoft can get out any message it desires, but its biggest fear is that one day the message will be completely ignored. The day may be coming sooner than later. Loss of control will be exacerbated by Microsoft's development policies and traditions.

For example, Microsoft has announced some sort of "real-time" version of Windows CE. This latest vaporware announcement at its own CE conference is surely just a trial balloon to see if anyone gets excited about it. If they do, then maybe Microsoft will attempt to actually make such a thing or buy some company that can. This is typical Microsoft marketing. And it misses the whole point of this emerging market.

It's not the Internet that will beat Microsoft, it's these small machines. Let me try to explain by examining some aspects of the Microsoft mindset. Let's start with the PalmPilot. I've been using a PalmPilot for four months without it ever crashing. A day seldom goes by without my Windows 95 machine crashing. A

handheld machine is perceived much like a calculator — a device that never crashes. In fact, the concept of a crash is alien to a user of a calculator. This simple point is lost on Microsoft.

I was told an amusing story by one of the executives at SCO (the UNIX house), about a mainframe conference where someone from Microsoft was giving a speech about the benefits of Windows NT. The guy made the claim that Windows NT was so reliable that it only crashed once every 28 days. The audience began to snicker, since to this group, that kind of failure rate was ludicrously high. The guy from Microsoft apparently never understood what the laughing was all about. His perspective was from a small-machine point of view. To him crashing only once a month is great!

Curiously, the machines coming from beneath the Microsoft layer — these pocket computers — are also machines that are supposed to never crash. The weird aspect to this is that it seems that only within the one layer of computerdom — the PC-centric world and which readers of this column are part of — do we accept machine failure as a way of life. By failure I mean program crashes, rebooting, shutdown failures, lockups, etc. This is not to mention hardware failures, which also occur all too frequently despite rosy MTBF numbers we are given by component makers.

This crash-prone world is actually the legacy of CP/M. This was the dominant operating system from 1976-1982, and the one from which MS-DOS was directly derived. In fact, there were two kinds of rebooting done with those CP/M systems, the so-called "warm-boot" and the "cold-boot."

Today's CTRL-ALT-DEL essentially combines the two, although there are some situations where we must still completely turn off the machine. In the early days of tube-based computers (1946-1955), reliability was a thematic problem. It was a goal to make a system that never stopped working. With desktop computers this was never an issue since the reboot was quick and the machines were cheap and functional. The sheer number of bugs and inexplicable incompatibilities with these small machines is staggering. Yet we accept it. Entire web sites and large books are dedicated to documenting problems.

The company that could do the most to change this is Microsoft, but instead it adds more features to create more problems. It turns out that there is no money to be made by fixing bugs unless it's coincidentally part of an upgrade, which promotes new features. Obviously, the horrible bugs that should not have been in the code in first place, are fixed as necessary.

In addition to his weekly syndicated radio call-in show, *Software/Hardtalk*, syndicated newspaper columns, magazine writing for *MacUser*, *PC Computing*, *DEC Professional*, *Information Technology*, and his featured "Inside Track" column in *PC Magazine*, Dvorak is the author of several best-selling books, including *Dvorak's Inside Track to DOS & PC Performance*, *Dvorak's Guide to PC Telecommunications*, and *Dvorak's Inside Track to the Mac*. He maintains a web site at www.dvorak.org. John can be reached at dvorak@dvorak.org.

to keep people from burning down the Redmond campus, but the company seems oblivious to the little bugs that people can reboot around.

Well, this attitude, fostered by a lazy user community, will not fly on the small platform. Retailers sell the PalmPilot and if it starts to crash, people will bring them back and demand their money back. The fact that Microsoft is already adding features to CE shows that it is still thinking the same old way. It should freeze the code and spend the rest of its time on optimizing and making the code 100 percent bug-free. It cannot manage to think this way.

Even if an edict went out and this column was passed to every employee, the culture of bloated buggy code and "it will work

fine by release 3.0 or 3.1" and "let's let the faster processor pick up the performance slack" will dominate.

"Hey, it worked before!" Unfortunately the buyers of these handheld machines are not all computer users and what Microsoft will do is give itself a black-eye if it attempts to foist mediocre code on the public, followed by the vaporware announcement ploy in hopes the dumb users will wait for the next, "better" revision. ♦



Dvorak's Recipe Nook homemade seafood sausage

There are certain weird aspects to sausages that fascinate me as I travel around the world. One is the overall mediocrity of American sausage making. In particular, you cannot get a quality British Banger, especially the little breakfast ones, in the USA.

I'm convinced that the main reason is that the true banger has more bread in it than is allowed by law. A banger is made from pork shoulder, bread crumbs, sage and marjoram. They are absolutely delicious when the proper proportions are put into the sausage.

These formulas are kept secret, but you can duplicate a great banger if you have your own sausage maker, which I recommend. Unfortunately, home sausage making has become so unpopular that you can hardly find a sausage/meat grinder any more. It's not helpful that a grinder of sorts comes with the Kitchen Aid mixer, which most home chefs use. Few ever make sausages with the equipment, as though it's an awkward lash-up.

Curiously, store-bought sausages, especially the \$7/lb gourmet sausages, are selling well. You'd think people would want to make their own just to save money and make things more distinctive.

One of the most delightful sausages you can eat is the seafood sausage, which was trendy in a number of expensive restaurants some years ago. I don't like the idea of buying seafood sausage from a store, as I do not trust fish handling practices, and seafood spoils too quickly.

I'd rather make my own.

Here is a recipe for homemade seafood sausage. It comes from the Morten's Recipe collection, out of Denmark, and is attributed to Chef Michael Roberts of Trump's in Los Angeles.

It's almost a perfect recipe.

This may have appeared in the book, American Bistro Cooking. I've only slightly modified it.

Seafood Sausage Ingredients (1 serving)

1 lb fish fillets, such as sole, flounder, salmon or whitefish
(all one kind or mixed)
1/2 lb scallops (shrimp can be substituted)
Raw, cleaned 1/2 cup packed cilantro leaves
4 large egg whites
1 tbsp. fresh lemon juice
2 tsp. ground cumin (optional)
2 tsp salt
1/4 tsp. ground black pepper
5 feet hog casing

Instructions:

- As with all sausage recipes soak the hog casing in cold water for a few minutes.
- Cut the fish into strips; the shrimp and scallops can remain whole.
- Put the seafood and cilantro through a coarse blade of a meat grinder.
- Combine the ground seafood with the egg whites, lemon juice, cumin, salt and pepper in a large bowl.
- Gather the casing up onto the sauce stuffing funnel attachment on your meat grinder.
- Put the seafood mixture back in the grinder and run it through again. Here you can experiment with whether or not to regrind the mixture. I think a coarse chunky seafood sausage is much preferred.
- Anyway, when it begins to emerge, stuff the casing as you would any other sausage, being careful not to overstuff. You should have about 4 feet of sausage.
- Leave 3 inches for expansion and tie the end in a knot.
- Twist to make individual sausages.
- Slow poach covered for ten minutes.
- Let cool ten more minutes in poaching liquid before serving.

The recipe, as originally printed, included jalapeños ground into the fish meat, which I believe was added just to make the recipe "different." Without the jalapeños this is actually a classic fish sausage. ♦

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